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Pepperdine University
Graduate School of Education and Psychology

BOOKS OR FOOD?
FOOD INSECURITY AND THE RISE OF CAMPUS FOOD PANTRIES

A dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Philosophy in Global Leadership and Change

by

Sonya Sharififard

August, 2020

Kfir Mordechay, Ph.D. – Dissertation Chairperson

This dissertation, written by

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under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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DEDICATION

To Mom and Grandma, my superheroes,

To Students,

To Leaders

ACKNOWLEDGMENTS

Thank you to Pepperdine University and the Graduate School of Education and Psychology.

I am indebted to the faculty and staff for their service, support, and leadership.

Thank you to President Jim Gash, President Emeritus Andrew K. Benton,

Provost Rick Marrs, and Dean Helen Easterling Williams.

I would like to thank Ambassador Glen A. Holden and the late Mrs. Gloria Holden for their support of my doctoral studies in the Global Leadership and Change program.

Thank you, Ambassador and Mrs. Holden, for your service.

Thank you for helping me continue my education and achieve my goals.

To Dr. Kfir Mordechay, thank you for willing to serve as the Chair of my dissertation committee. Your scholarship has made me a better researcher. I understand that it is not always about the variety of research interests that will determine our ultimate success, but what we envision will empower our knowledge that enlightens our progress. Thank you for helping shape my research interests in policy, public affairs, and economics; and thank you for opening the doors I needed to succeed. I appreciate you very much.

Dr. June Schmieder-Ramirez, because of you and the *making of a Ph.D.*, I am here today.

Thank you so much for leading discussions about completing our best work, preparing for the unexpected, packing for a purpose, and working hard toward our dreams.

Dr. Paul Sparks, thank you for dedicating best practices in learning technologies and paving the model for an advanced learning environment. Your feedback has always served me in the best way possible, and I have continued to use your suggestions in my career and research. You have advanced my understanding of educational excellence and scholarship, and I thank you for your service.

Thank you to the staff and faculty who generously took the time from their respective schedules to participate in my pilot study.

Thank you to this study's research participants for sharing their expertise.

I further extend my deepest gratitude to Dr. Mark Allen, Abdulaziz AlWehaib, Irene Artavia-

Misciagna, John Baker, Michelle Blas, Dr. Lisa Bortman, Dr. Maria Brahme,

Dr. Vance Caesar, Dr. Ebony Cain, Dr. Mark Chen, Dr. Anthony Collatos, Christie Dailo,

Dr. Kay Davis, Dr. Renee Dorn, Dr. Lani Fraizer, Dr. Reyna García Ramos,

Dr. Annette Gilzene, Dr. Charles Gross, Dr. Eric Hamilton, Glenna Hanna,

Yas Hardaway, Jose Juan Hernandez, Marco Huerta, Dr. Laura Hyatt, Dr. Martine Jago,

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Dr. Farzin Madjidi, Dr. Doug May, Greg McNair, Dr. Lonnie McNamee, Regina Meister,

Dr. Gabriella Miramontes, Dr. Joyce Osland, Daniel Ramos, Dr. Kent Rhodes,

Hermito San Jose, Dr. H. Eric Schockman, Dr. Cameron Sublett, Jane Tucker,

Dr. Ricardo Vigil, Dr. Maria Wright, and Mahsa Zojaji, for their expertise,

instruction, and profound support.

Thank you to the late Professor Emeritus John "Jack" McManus, whose inspiration and policy development course led to the foundation of this study. Jack: may every angel in heaven be with you. I hope stars always turn to you and keep the light you have given to so many.

Thank you to my family for their love and support.

Mom and Dad, I love you so much.

I am such a proud and honored daughter.

Thank you for the gift of life.

VITA

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ABSTRACT

This dissertation is a quantitative study of campus food pantries located in public four-year colleges and universities in the United States. The research aims to explain relationships among campus food pantries and surrounding neighborhood characteristics affecting local food environments. There are two parts to the study: (a) the quantitative analysis through responses from a participant questionnaire; and (b) a case study analysis to accompany the quantitative analysis. The researcher identified three metropolitan counties within U.S. census tracts, to determine the relationship between neighborhood demographics, the local food environment, and the impact on campus communities. The researcher explored food accessibility within college or university distances. Organizational and administrative perspectives about campus food pantries and basic student needs have been conceptualized in the context of education, sociology, and anthropology, among others. The types of food available at food retailers have not been studied to understand student populations and the role of campus food pantries in higher education. This study specifically considers food pantries from an administrative point of view, and asks three different research questions:

1. What are the most significant factors contributing to the growth of campus food pantries?
2. To what extent have food pantries on college campuses helped to alleviate food insecurity among students?
3. What are the ways in which college food pantries have improved the dietary needs of student populations?

The researcher suggests that an increase in the types of food stores in neighborhoods, such as convenience stores, can limit the types of food items available in the community and on college

and university campuses. The researcher also suggests that a variety of food stores are needed to serve the diverse student populations enrolled at colleges and universities.

Finally, this study provides recommendations for advancing student success and integrating campus food pantry services with academic success.

Chapter 1: The Problem

Introduction

An emerging area of concern among college and university students in the United States is food insecurity (Daugherty et al., 2019; Davis et al., 2020; Evans, 2016; Hagedorn & Olfert, 2018; McArthur et al., 2019; McCarthy, 2019; Mukigi & Brown, 2019; Ullevig et al., 2019). Food insecurity refers to a condition in which an individual has insufficient or reduced intake, reduced or less quality, limited or no variety, or desirability in their diet; and disrupted eating patterns because of limited or no access to nutritious and safe foods (Barrett, 2010). Generally, the most common forms of food insecurity challenges include either the inability to afford balanced and nutritional meals, the reduction in the size of meals, the conserving of available food, or the avoidance of eating regular meals because of a lack of funds.

Food insecurity among college students ranges anywhere between 14-59% (Buch et al., 2016). According to Cady (2014), students with food insecurity are more likely to receive federal nutrition assistance and need-based financial assistance. They are likely to have experienced food insecurity before college entry than students with food security. A survey conducted by the Regents of the University of California (UC) found that students across UC's ten campuses do not have adequate food access; and are also likely to continue skipping meals to save money (Martinez et al., 2016).

Poor nutrition contributes to fatigue, difficulty with concentration, irritability, chronic diseases, and lower productivity. Food insecurity can affect a student's ability to complete their education, including poor health outcomes, low academic performance, and low cognitive functioning (Gundersen & Ziliak, 2015). In 2011, a survey conducted at the City University of New York revealed 40% of students reported being hungry, and 22% of surveyed students had

skipped meals due to financial constraints (Freudenberg et al., 2013). In a survey of students experiencing food insecurity at an urban public research university in the U.S., 80% of the research participants reported that their experiences affected their class performance. Over 55% of those same students reported that food insecurity hindered their ability to attend classes, 27% reported an inability to eat nutritious meals due to financial struggles, and 26% reported skipping meals due to a lack of money to buy food (Silva et al., 2017). Further, about 6.4% of participants reported severe food insecurity to the extent that they would not eat for a few days because of insufficient funds for food. These factors directly affect a student's performance in the classroom, retention, and graduation rates (Bruening et al., 2017; Cady, 2014; Shipley & Christopher, 2018).

College and university students might experience food insecurity by struggling to live on a budget, handling issues with managing a budget, having limited food preparation skills, and having extraneous expenses. Some students have limited resources and are unable to cover their living expenses, while others live with their families in households experiencing food insecurity. Students experiencing food insecurity have been found to have lower grades in school, work while enrolled in classes, receive financial aid, and not live with family (Bruening et al., 2016), all of which can affect educational attainment outcomes into adulthood. In 2017, a student survey found that one in every ten undergraduate students at private research and land grant, sea-grant, and space-grant universities could not afford either one or all of the following: food, course supplies, transportation, or professional attire for job interviews (Chao, 2017).

Nationwide, 57% of students with food insecurity have been shown to have experienced food insecurity for the first time. This suggests that students living on their own for the first time are likely to need financial and health literacy training. Additionally, students might also require

supplemented information about food access resources, student financial aid, and managing schoolwork while living on a budget (Cady, 2014) to manage their financial and personal health. Patton-López et al. (2014) asked a sample of students if they had ever felt the need to compromise their health for the affordability of food. Student responses to their individual dining decisions included the following as the most critical factors in making food choices:

1. The menu selection available at an establishment, 60%
2. The price of food, 67%
3. The convenience of a location, 76%

Although 59% of students were found to be food secure, and used their campus meal plan, they also were unable to afford balanced, nutritional meals. These findings suggest that there is limited access to securing well-balanced meals, even if there are available meal plans.

Campus food environments can contribute to poor eating patterns. Students' perceptions of the campus food environment underscore the importance of food affordability. It shows that, overwhelmingly, students will know that unhealthy food options are available, but are uncertain about available healthy food options. The potential effects of insufficient dietary intake may include long-term health deficiencies, poor eating habits, susceptibility to various diseases, and social and intellectual challenges with managing day-to-day activities.

Access to affordable, quality, fresh, and nutritious foods on campus depends on a student's location. The types of dining halls on campus and the high prices of healthy food retailers and eateries affects a student's access to good food (Marquis et al., 2019). Some students do not have meal plans, and others who live away from campus might not use the campus facilities, such as dining halls. Freshmen students may encounter significant transitions into independence and adulthood, including behavioral, emotional, and social responsibilities

and changes. Freshmen students also have reported higher levels of stress, higher rates of weight gain, and poor eating patterns (Cady, 2014).

Students with persistent structural, emotional, and physical barriers to accessing healthy foods may also experience impaired concentration and a lack of understanding of basic course concepts (Cady, 2014; Phillips et al., 2018). In a national study of 30,000 students among two-year and four-year colleges and universities, over 50% of students at the four-year universities reported that they had experienced or were currently experiencing food insecurity. Between 11-38% of students were experiencing or had experienced food insecurity at the two-year colleges (Phillips et al., 2018). The study's findings supported growing evidence for the high prevalence of food insecurity on college and university campuses and its effects on student health and success.

When studying students attending one urban and one suburban community college, 60% of the students surveyed at the urban community college had experienced some form of food insecurity, whereas 53% of the students at the suburban community college identified their experience with food insecurity (Maroto et al., 2015). The likelihood of this finding is that urban community colleges may have higher living expenses. Therefore, students who might have been financially dependent would be challenged to overcome such barriers during enrollment. Another likelihood is that more students enrolled in the suburban community colleges live with their families, where most outside expenses are used for school. Further, the international students at both the urban and suburban community colleges had reported language barriers and limited transportation availability as a barrier to food access.

A lower GPA could predict the amount of time it takes to complete a degree. Students who have experienced severe food insecurity in college are more likely to have failed the courses

that were part of their degree requirements (Freudenberg et al. 2013; Knol et al., 2017; Patton-López et al. 2014). Morris et al. (2016) found that some students who have experienced food insecurity in college have tended to have lower grade point averages (GPA). Students who report experiencing food insecurity are less likely to report a GPA of 3.1 or higher (Patton-López et al., 2014). Community college students who experience food insecurity have a lower likelihood of having a good GPA, which positions some of these students at potential risk for being unable to fulfill their degree requirements (Ilieva et al., 2019; Maroto et al., 2015). There are no recent studies to suggest that students experiencing food insecurity are unlikely to graduate from college. Additionally, working for 10-15 hours per week positively impacts a student's academic performance and learning engagement, however students working for more than 20 hours per week tend to have lower GPAs (Cady, 2014).

Background of Problem

Food insecurity is an issue of global importance that affects many students in several countries, cities, colleges, and universities outside the U.S. (Farahbakhsh et al., 2015; Hanbazaza et al., 2016; Micevski et al., 2014; Sabi et al., 2019; Theodoridis et al., 2018). Food delivery to consumers involves many actors, including individuals and agencies (National Research Council, 2015). Within the food and agriculture systems, supply chains, market segmentation, and regulations across states and cities affect the composition of regional and local food systems (Nesheim et al., 2015). The variety of convenience foods, easy-to-prepare foods, ready-to-go snacks, and consumption has increased, while the time spent on food preparation has decreased.

Genetic engineering techniques also have affected the overall food system. Of all corn and soybean crops, 90% have been genetically engineered (Fernandez-Cornejo et al., 2014). The genetic engineering of such crops has affected the rate of food quality, food preferences, and

food marketing. Over the past decade, colleges and universities have partnered with local farmers to introduce students to the food cycle and food manufacturing processes. The food industry's partnerships with land-grant universities in the U.S. have helped overcome some of the challenges associated with mass food preparation. Technological innovations across the food system, such as reducing spoilage while improving the flavor of foods, have allowed land-grant universities to work with farmers in creating safer and improved food for consumption (Alston et al., 2008). Consequently, Alston et al. (2008) argued that improving the quality of foods might increase food waste, leading to subsequent environmental problems (Alston et al., 2008).

Different food products and the product assortment at food stores and retailers can affect consumer interests. Social influences and food behaviors of a community affect grocery shopping behaviors of residents in that same area and their nutritional decisions (Leonard et al., 2014). The demand for fresh and nutritious meals and the ease of disposing of food items have increased food waste. Policies that subsidize fewer goods can lead to lower micronutrient intake in response to having dietary diversity in the food system (Pingali, 2010). The policies that support dietary diversity but fail to consider micro and macronutrient food quality can begin to restart a cycle of food insecurity.

Many universities have limited resources available for students who need food assistance. It was posited that the first step in alleviating food insecurity among students is to increase students' awareness of financial aid and other support services available to them on campus and in the community (Mangan et al., 2010). Significant events, such as the Great Recession, have changed the financial obligations and economic prospects of students entering higher education (Nazmi et al., 2018). Enrollment status and matriculation to a public or private institution do not necessarily affect the likelihood of experiencing food insecurity. However, among two-year and

four-year schools, unemployed students looking for work are the most likely to experience food insecurity. Students enrolled part-time in four-year public colleges and universities have been significantly more likely to experience food insecurity (Blagg et al., 2017). Part-time enrollment could be attributed to several factors, including responsibilities for childcare, work, and the inability to attend school full-time, among other reasons. Having multiple responsibilities in addition to schoolwork can affect how students manage their time and take care of their health and wellbeing.

As students begin school with distressed outcomes, it becomes increasingly difficult to foresee prospects of academic success. Students enrolled in technical and vocational education institutions have higher rates of food insecurity than students enrolled in traditional four-year colleges (Watson et al., 2017). This suggests that professional responsibilities might impact the path students take toward succeeding in their future careers. Also, professional responsibilities that are not related to academic success, or do not help with program learning outcomes do not help students perform well as they advance in their academic careers.

In a study including students from low-income families enrolled in public two- or four-year colleges or universities, 90% of students were concerned about not having enough money for their expenses to attend college for their first semester (Broton & Goldrick-Rab, 2016). The students reported having to change their shopping and eating habits and their work schedules to accommodate their needs. Students also reported using credit cards more often, and either stopping or postponing paying their utility, medical, and cellular bills. Other changes in their activities included eliminating computers from their houses, reducing utility usage, and avoiding purchasing the required books and supplies for their academic courses.

The future consequences may become overwhelming if an individual does not begin to establish stable credit as a student. One's knowledge about financial, nutritional, and economic literacy could determine students' postgraduate outcomes and quality of life. The challenges faced with budgeting and financial management lead to persistent patterns of poor decision making that may affect one's credit score and budget, as well as their economic activity such as investing, spending, and saving. As a result, students will have fewer opportunities to compete for internships and job opportunities. Further, their potential to earn a degree and fulfill all responsibilities and school requirements becomes diminished.

Physiological and emotional distress incurred by completing a degree impacts how students react to their food insecurity needs and class performance. Many students often opt to leave college because of the stresses of supporting themselves while attending school. Family commitments, housing costs, accrued school-related expenses, and essential personal responsibilities have challenged even students who receive federal financial aid and work full- or part-time jobs. It is also difficult to succeed academically when financial aid and scholarships do not adequately cover students' needs. These issues often cause students to take a leave of absence, preventing them from fully dedicating their time and commitment to academic success and schoolwork. Such situations may affect future career prospects and postgraduate opportunities.

Campus meal plans might not always serve as a viable option for preventing food insecurity. Many low-income students lack the funds necessary to afford a comprehensive meal plan. Selecting a more cost-effective meal affects the number of meals a student may consume, affecting how much nutritional value would be consumed. Students have reported having less time to prepare meals, which adds to the cycle of food insecurity. Further, if a student is working

full time while enrolled in school full-time, they are required to choose between an academic course load that offers them the opportunity and necessary flexibility to fulfill their degree requirements; or consider advancing their curricular activities. While students might have the option to do both, they might also encounter compromising their food security because of participating in subsequent events related to school and higher learning engagement, socially and academically. These events and decisions can challenge prolonged success and the efficacy of student-faculty relationships.

Having a clear understanding of how specific college and university environments affect student wellbeing, academic achievement, and the motivation to succeed can help predict future economic factors such as poverty in adulthood, financial management, housing stability, and career success. The rising cost of attending college is attributed to the varying degrees of food insecurity, affecting many college students (Watson et al., 2017). Thus, many students may choose between essential materials needed for attending college, such as books, and critical nutrients to sustain their concentration, energy, and wellbeing, like food.

Purpose and Importance of Study

Some colleges and universities have launched campus food pantries as a solution to helping students with limited or no access to consistent food. A 2016 report studying over 3,000 students across 34 college campuses indicated that only 14% of students with food insecurity had used a campus food pantry or a community food bank (Bruening et al., 2016). Some of the more recent food pantry studies have been used to identify the increased concerns of student food insecurity and other basic needs concerns on college and university campuses. However, the types of foods available at food pantries have not been studied to infer the relationships between food security and dietary food quality. Further, the variety of foods included in campus environments and food

pantries have not been examined from an administrative or leadership perspective. As campus leaders begin to recognize growth through advancing student success, campus food pantries will be better prepared to serve students who would not use a campus food pantry for their food security needs.

The campus food pantry's role becomes increasingly important for staff members to determine how or why their campus and food pantry effectively differentiate among food products. Their role also helps advise students who are fulfilling their degree requirements while encountering challenges with essential health needs.

Further, students are likely to schedule intermittent breaks on campuses where classes are spread across different buildings and locations; or if they are attending back-to-back classes that are not within the same or equal distance to one another. Consistent meal arrangements in between each class or participating in other curricular activities can be affected by those specific locations on campus, where one activity must be compromised for the other. The limited or restricted hours of operation even become more complicated for students when they cannot use the pantry at a time convenient for their schedules. Available staffing and the limited capacity to manage facilities during holiday breaks and the summer reduces the ability to have the consistency of foods regularly. Therefore, a limited number of items can be offered in the pantry, but a student who needs those items will not be able to receive them at an appropriate time. The types of benefits a student can take advantage of can become significantly reduced. Students would be expected to find other ways around campus or beyond school to obtain individual resources for their food insecurity needs.

The relationships that pantry staff members develop with student patrons, and the relations that faculty and staff form on campus grows the basis for partnering students with an

active role on campus. When a college or university successfully connects their institutional goals and values to the greater community, they can help other programs and projects raise awareness about the persistent issues of food insecurity. When students feel that their needs matter, they will have more space to communicate how their needs are reflected on campus. The opportunity to present campus issues and personal gaps in the learning environment can help educators understand the needs of their teaching and learning communities and consider how barriers are reflected in their classes and institutions.

The direct relationships between the campus, the community, and the food pantry can contribute to improved communications between faculty, staff, and students. Also, being mindful of student needs, and understanding the structural, legal, and attitudinal barriers to food choices and food consumption is necessary for investigating food-related matters beyond colleges and universities. It is important to honor and respect all students' food choices and their individual dietary preferences. Additionally, the various campus environments and the types of campus food pantries can show how an institution fulfills its mission, role as an institution, and overall student learning outcomes. For interventions to be successful or for the successful longevity of campus food pantries, sensitivity to cultural issues and economic, social, and geographic barriers, should be visited.

From basic needs to psychosocial and academic health and wellness, the overall food quality is as significant to employ as the type of dietary guidelines and preferences a public institution or food vendor follows. To the same effect, higher costs for food items would affect the campus food pantries with limited operating budgets. In turn, the pantry staff would most likely continue to use external partnerships, such as food banks, to obtain their inventory. While it is significant to sustain such partnerships, both parties should have an advanced understanding

of the populations they serve. Their objectives and common purpose could be used to identify the growing needs and emerging demands of new student populations and community concerns.

Further, having the consideration to understand various student food preferences, organizational behaviors among the community, social characteristics, and neighborhood demographics can help food retailers' prospects for entering a new market in a specific community. Similar considerations can assist higher education administrators in determining where the availability of nutritious, cultural, and healthful food is needed for a student population. Geographic, racial, and class disparities and health discrepancies can persist if the interplay between food preferences, social networks, and the shift of neighborhood characteristics over time do not align with specific student dietary preferences, food choices, and the availability of markets and food products.

Using food pantries is just one solution to food insecurity. Food insecurity issues cannot be framed from a food scarcity lens or the lens of food marketing. Though the lack of sustainable campus food pantries has not been found within the specific context of higher education, it is part of perpetual food insecurity and poor health conditions. When students encounter challenges securing their food needs from a campus food pantry, their other options consist of identifying foods outside the campus. Students can further find challenges with their necessary food security when the community does not offer their food needs. When preferred foods are not available at or near the campus, more challenges become prevalent in solving food insecurity issues.

If there are similar presented solutions, recognizing the importance of a solution or service such as a food pantry will be useful for many of the problems encountered with food insecurity. Different solutions with different purposes and interests can still reduce the meaning and effectiveness of the programs. Recently, the increasing changes in modern higher education

and the types of needs required to sustain a quality education have changed the structure of the campus environment. With the growth in online degree programs and hybrid learning environments, food insecurity topics will continue to develop a greater need for public-private sector partnerships at the local level, which is important to advancing public policy discussions and urban planning initiatives.

Also, new communications are being used to enhance tech-related programs, and students can become contributors to their learning environments and personal growth. In terms of student success and wellness, leaders and administrators of colleges and universities could determine the extent to which their schools are responsible for providing a variety of basic needs to meet their students. Cultural and economic differences throughout campus are important in understanding some of the best ways to advance student success.

Improving the function of the food pantry and involving students in relevant activities can increase participation in student affairs and student-driven work across campus. Other questions could begin to be raised among students when an important part of social and spiritual support is not available or recognized at the institutional level. These decisions are critical when factoring the best kind of alternatives and policies for student success.

As students also begin thinking about their program timeline and course completion, they might encounter difficulty meeting their basic needs when they transition to advanced levels of their studies. Having these issues will lead students to incur additional costs to their education and will likely prolong their time to complete their degree requirements. The costs associated with specific programs, food expenses, and other financial obligations in school affect the types of responsibilities and roles students choose to take.

Additionally, when students are equipped with the resources necessary to strengthen their academic and personal success early on, they will also have a better understanding of the processes and activities necessary to effectively communicate their needs. The critical work necessary for promoting student success outcomes and student learning objectives is a core component of academic performance indicators that help a student's position in teaching and learning. Therefore, the purpose of this study is to

1. understand the predictors of food insecurity among university populations, and
2. identify the types of food pantries across college campuses in the United States

There are also anticipated benefits for future subjects and society in general, which include:

- Better clarity around food systems and food environments
- Making sense of the complexities associated with food security, food law, and food policy within the context of higher education
- Participating in a shared understanding of how a campus food pantry is used to sustain organizational goals
- Preparing for wellbeing academically, socially, and emotionally
- Forming positive relationships at all levels of the college or university

Research Questions

The researcher used the following research questions to help inform the purpose and importance of the study's problems:

1. What are the most significant factors contributing to the growth of campus food pantries?
2. To what extent have food pantries on college campuses helped to alleviate food insecurity among students?

3. What are the ways in which college food pantries have improved the dietary needs of student populations?

Conceptual Hypothesis

The researcher hypothesizes that as food insecurity continues to affect students on college campuses, the more likely it is for food pantries to increase. The researcher also hypothesizes that a lack of food items on and around college campuses contributes to the growth of food pantries that do not improve student populations' dietary needs, furthering the persistence of food insecurity among students. Due to the lack of food options in several campus neighborhoods, the researcher believes that a campus food pantry is likely to be the most effective service to implement in a college or university.

Clarification of Terms

College and University Food Bank Alliance (CUFBA): a professional organization of campus-based programs focused on alleviating food insecurity, hunger, and poverty among college and university students in the United States (College and University Food Bank, n.d.).

Federal Pell Grant: a federal grant awarded only to undergraduate students who display exceptional financial need and have not earned a bachelor's, graduate, or professional degree (United States Department of Education, n.d.b).

Federal Work-Study: a federal student aid program that provides part-time employment while the student is enrolled in school to help pay their education expenses (United States Department of Education, n.d.b).

Food bank: a place where food is given to people who do not have enough money to buy it (Cambridge Dictionary, n.d.b).

Food desert: a census tract that meets both low-income and low-access criteria

including: 1. poverty rate is greater than or equal to 20 percent OR median family income does not exceed 80 percent statewide (rural/urban) or metro-area (urban) median family income; 2. at least 500 people or 33 percent of the population located more than 1 mile (urban) or 10 miles (rural) from the nearest supermarket or large grocery store (United States Department of Agriculture, 2018a).

Food insecurity: reports of reduced quality, variety, or desirability of diet, or multiple indications of disrupted eating patterns and reduced food intake (United States Department of Agriculture, 2018a).

Food pantry: a distribution center in which food, beverages, and utensils are kept and supplied for individuals in need (Waite, 2019).

Food security: little or no reported indications of food-access problems or limitations, or of changes in diets or food intake (United States Department of Agriculture, 2018a).

Food stamp: a nutrition assistance program, Supplemental Nutrition Assistance Program (SNAP), offering services to eligible, low-income individuals and families (United States Department of Agriculture, 2018b).

Food system: the inputs, activities, people, outputs, and outcomes associated with getting food from seed to plate (Shannon et al., 2015).

Historically Black Colleges and Universities (HBCU): colleges and universities established prior to 1964 that have the principal mission of educating Black Americans (National Center for Education Statistics, n.d.).

Housing insecurity: limited or uncertain availability of stable, safe, adequate, and affordable housing and neighborhoods; limited or uncertain access to stable, safe, adequate, and affordable housing and neighborhoods or the inability to acquire stable, safe, adequate, and affordable housing and neighborhoods in socially acceptable ways (Cox et al., 2019).

Land-grant university: colleges and universities in the United States designated to receive benefits of the Morrill Acts of 1862 and 1890, which promote the establishment of institutions of higher learning focused on the agricultural and mechanical arts, without excluding other scientific and classical studies (Croft, 2019).

Mental health: a state of mind characterized by emotional wellbeing, good behavioral adjustment, relative freedom from anxiety and disabling symptoms, and a capacity to establish constructive relationships and cope with the ordinary demands and stresses of life (APA Dictionary of Psychology, n.d.).

Nutrition security: the need to secure access to an appropriately nutritious diet, comprising all essential nutrients and water, coupled with a sanitary environment and adequate health services and care to ensure a healthy and active life (Hwalla et al., 2016).

Public institution: a college, university, or other post-secondary institute of higher education established either by state constitution or by statute that receives funding from state appropriations as well as tuition and endowments (Cambridge Dictionary, n.d.d).

Private institution: a college, university, or other post-secondary institute of higher education, usually a corporation, that is operating under state charters (Cambridge Dictionary, n.d.d).

Sea-grant university: a federal/university partnership between the National Oceanic and Atmospheric Administration (NOAA) and 33 university-based programs in every coastal and Great Lakes state, Puerto Rico, and Guam (National Oceanic and Atmospheric Administration, 2018).

Space-grant university: a national network of colleges and universities working to expand opportunities for Americans to understand and participate in the National Aeronautics and Space Administration's (NASA) aeronautics and space projects, by supporting and enhancing science and engineering education, research, and public outreach efforts (May, 2018).

United States: a country comprised of 50 states in North America, bordering both the North Atlantic Ocean and the North Pacific Ocean (Central Intelligence Agency, 2019).

Chapter 2: Review of Relevant Literature

This chapter reviews food insecurity and its impact on educational outcomes. Some of the factors contributing to food insecurity among college students, including living situation, financial standing, and school expenses, are explored. Next, the chapter reviews the prevalence of racial and ethnic demographics and their effects on nutritional access. Literature gathered from ten years of food security, nutrition, poverty, dietetics, and public health topics are used to assess the impact of food insecurity on college and university students. The researcher then reviews the implications of food insecurity challenges, academic success, and the recent institutional efforts used to address the problem in the United States. Finally, the chapter concludes by discussing the rise of campus food pantries in the U.S.

Food Insecurity

According to the United States Department of Agriculture (USDA), food insecurity is categorized as either “low food security” or “very low food security.” Low food security occurs when an individual has less quality and variety in their diet but is still obtaining enough calories. Very low food security is defined as eating less or not at all because of limited resources (USDA, 2018a). Food systems policies have generally affected the food supply and have contributed to low food security among individuals, and disproportionately influenced domestic and global food prices (Neff et al., 2009). While such aspects of food insecurity can be a combination of social, physical, traditional, and cultural factors, the complex nature of the food supply chain evolves, and the availability of food affects the food environment's characteristics.

Food insecurity has been linked to structural deficiencies in the local food system, unpredictable circumstances, natural disasters, and chronic poverty. While food insecurity can be attributed to specific populations and geographic inequities, it has primarily been a public health

issue. One of the first studies to have investigated food insecurity from a student perspective was conducted at a public research university in Hawaii (Chaparro et al., 2009). The researchers found that 45% of students surveyed were either experiencing food insecurity or at risk of experiencing food insecurity.

In the same study, 15% of students experienced low food security and 6% had very low food security as defined by the USDA guidelines. It was suggested that students who lived off-campus with roommates, and students who lived on campus, were significantly more likely to experience food insecurity than students who lived with parents or relatives (Chaparro et al., 2009). Only 11% of students who lived with their parents were shown to have experienced food insecurity compared to 13% of students who lived off-campus with a spouse/partner. About 95% of the students ($n = 441$) were dependent on their families for financial aid purposes, and of those students, 54% had grown up in homes struggling with food insecurity.

Students' financial aid and living status would also likely have been affected by expenses related to unpaid internships, volunteer experiences, and other professional activities. However, the study did not include first-year students in the survey, and the forms of debt accrual were not included about upper-class students. Therefore, the participation of extracurricular activities would not have affected the types of acquired debt and perpetual debt in forthcoming studies as an upperclassman.

Researchers, Chaparro et al., 2009; Jones et al., 2018; Knol et al., 2017; Morris et al., 2016, have suggested that students who receive financial aid, and who live off-campus with no parents or relatives may experience higher rates of food insecurity and higher financial strain. Students financially supporting themselves are as likely to report food insecurity than those who are not economically independent (Freudenberg et al., 2013). Living off-campus might not be the

option for students to acquire the types of foods and meals they need. How students cope with the difficulties of financing their schoolwork and personal needs can help to understand better when food insecurity is likely to affect a student's choice of housing.

In a study conducted at a public land-grant, space-grant, and sea-grant research university in Florida, researchers (El Zein et al., 2018) found that 31.52% of students experienced a form of food insecurity, with 42 students experiencing very low food security. Approximately 24.3% of students with food insecurity reported residing on-campus. About half of the surveyed students, 49.7%, reported being employed in either a part-or or full-time job. The study did not report how long the students had held their positions; but almost 23% of the research participants were Federal Pell Grant recipients who had experienced the most food insecurity.

Additionally, 35% of the students had reported using student loans for their educational expenses. In the same study, participants were predominantly female, White, single, and undergraduate students. Undergraduate students were more likely to report food insecurity compared to graduate students. One possibility of this finding could be that graduate students are better at budgeting their finances and experienced in preparing consistent and balanced foods for their dietary needs.

African-American/Black students were experiencing more food insecurity than White students by almost a 40-point percentage. The participants indicated their status as international students had the highest rates of food insecurity compared to in-state and out-of-state students. This finding could have likely resulted from limited transportation, language barriers, and little familiarity with finding places to shop for foods. When asked if the students use the campus food pantry, most students reported to have been aware of the service, but only about 15% of the students had used the food pantry (El Zein et al., 2018). Students experiencing food insecurity

may be hesitant to use the food pantry because of the stigma. By using the campus food pantry, students may feel embarrassed about their food insecurity situation and may avoid facing peers and colleagues who may find out about their experience. Additionally, students might not find the quality of the foods available at the pantry suitable to their respective diets. The rise of campus food pantries and their services are further explored in this chapter.

The study also examined the body mass index (BMI) of the student participants and their food acquisition but found no relationship between students' food insecurity and BMI categories and health outcomes. Physical fitness and wellness are essential to examine the effects of positive health with positive experiences in school, but measuring BMI is a flawed method for understanding food insecurity. A participant may have also recognized the study as a health and nutrition study for which body imagery was the primary data collection. A qualitative sample of students who were obtaining employment for financial need and urgent food insecurity would be helpful to the study's findings.

Other dietary, religious, ethnic, or personal food choices were not included. One student indicated that experiencing food insecurity for a long time caused him to purchase alternatives to healthier foods, such as cheap supplements because it was hard to find quality nutritional food. Similar findings were also found by Huelskamp et al. (2019). Another student reported that federal financial aid only covers tuition, rent, and books, but food and gas were not included even with the support of a grant. Housing insecurity had also contributed to persistent issues. Participants were further asked how and where they acquired or obtained food, to which they indicated buying their groceries from low-cost chain grocers near their homes.

Students further reported transportation as another significant barrier to food access. Thus, it was more convenient to visit stores that were easier to access from their homes. When

the students purchased food, they would typically buy less expensive food in bulk that would last for a more extended period. The same students recognized shared concerns with the quality of food with harmful health effects. Still, they were willing to acquire food from those stores for convenience and affordability. Many participants also shared how they would participate in campus events that serve food. Further research about the availability of foods in a food environment is important to understand how students with specific dietary needs can learn about the health content of their foods without risking their diets and the quality of the foods they routinely consume.

Besides lacking reliable transportation and a sufficient income, students indicated that working a full- or part-time job, attending classes, and studying contributed to a more considerable lack of time in their schedule. Shopping for food and preparing meals requires the necessary time needed to meet each need. Students expressed that it was common to opt to purchase foods that were convenient to prepare and were available at locations with short commute times.

Students who lived in the campus dormitories stated that their units often did not have proper or adequate kitchen appliances to cook and store food. These students faced challenges with purchasing, preparing, and storing food at home. Many participants indicated a willingness and preference to purchase healthy foods. However, finances and a lack of proper storage at home became a barrier. Additionally, the students experienced shame and stigmas with wanting assistance. This research suggests that students experiencing food insecurity desire consistent financial independence and maintain manageable food consumption habits without accessing food assistance. Instead, they were faced with several layers of economic, social, and political barriers.

Some students would seek grocery store jobs and foodservice industry employment so that there would be a possibility to access free or discounted food. Some other coping strategies students would also consume cheap, fast foods, share food with roommates, suppress their hunger with excessive fluid intake, and reduce their meal portions. Additional coping strategies included taking out loans, donating blood, taking online surveys for compensation, being research participants for studies, selling personal items, and attending different events with included meals whether they were invited.

Participants also admitted to stealing food to make ends meet by borrowing a friend or roommate's ID to use their available meal points. A few participants reported intentionally not paying bills to have money to pay for food. When participants were asked about their other coping strategies, female students indicated that they were more likely to use their networks. In contrast, male students indicated their willingness to go without food. The participants did not report for how long they would be willing to or have used such strategies, but most of the students indicated frequenting community soup kitchens if needed. For these students, it was a priority to earn their degree to secure a job after graduation and improve their quality of life. They also had considered the possibility that quitting school to work full-time might be the solution to their current food insecurity issues, but not worth the long-term prospects of finding better employment opportunities.

According to Freudenberg et al. (2013), financially independent students are more likely to experience food insecurity than financially dependent students. While financial independence can advance one's position and status, adapting to adulthood and living individually for the first time may begin to form changes in diets, planning for meals, and food consumption, to secure their independence and investments. Students living on-campus are likely to have better diets

than those living off-campus (Brunt et al., 2008). Students who live with their parents or relatives are less likely to experience food insecurity than students who live alone (Hughes et al., 2011). This finding is expected to support that students in financially independent and financially dependent situations may perpetually face challenges paying for their college expenses.

(Patton-López et al., 2014) found that 59% of students at a public university in Oregon had experienced food insecurity (Patton-López et al., 2014). The sample represented full-time undergraduate students within the 18-24 age range. Most of the students in the sample, 88%, reported having credit card debt, which may have been a factor of a student's food insecurity status. Of the students experiencing food insecurity, 29% reported to have resided off-campus, and lived with roommates, lived alone, or lived with parents.

About 50.3% of students experiencing food insecurity indicated that they were employed in addition to attending college, working an average of 18 hours per week. The employment status, i.e., full- or part-time, is not reported. Still, students working to support themselves and access consistent sources of food are affected by time management skills the students have acquired for their academic course load, their work schedules, and setting time for food preparation. Food insecurity was not significant by living arrangements, student enrollment status, health insurance status, physical activity, race, or other demographic factors.

Accruing debt, another area of concern for students (Gaines et al., 2014), persists when making payments for expenses with credit cards or loans (Hornak et al., 2010). According to a study conducted in 2006, 71% of college students charge books and food expenses to credit cards, and 84% of purchases charged to credit cards are primarily transacted by undergraduate students (McGlynn, 2006). Students with food insecurity, Hispanic/Latino students, international students, and graduate students are more likely to use a credit card to purchase food. Students

who are experiencing food insecurity are generally more likely to use a food pantry and borrow money to pay for college, compared to food secure students (El Zein et al., 2018). Students who borrow money to attend college have higher rates of food insecurity than students who do not borrow money for their educational expenses (Morris et al., 2016). Borrowing money and having more educational expenses could vary depending on the student's academic program or concentration. The degree-granting university may have different fees for its academic programs that cannot be generalizable from state to state.

According to Watson et al. (2017), students who are financially at risk are more likely to use credit cards for groceries and expenses. The researchers conducted a focus group interview using 10 participants to observe food insecurity patterns and coping strategies. It was reported that the interview questions were validated by the institution's faculty, and an expert on food insecurity issues challenging students. The researchers used semi-structured interview questions that involved questions about food literacy and food security (Watson et al., 2017). The study informed participants about some of the terminologies in food security, which helps understand the phenomenon's perceptions and interpretations and its social and academic implications. Students had the opportunity to share their experiences in a place that they might have considered a safe space. However, many generalizable assumptions can be made about the participants from the focus group.

For example, some students may have been curious about the issue of food insecurity or have been interested in the researchers' incentives as compensation for participation. They also may have never been in or familiar with a situation involving food insecurity. Others might have participated as moral support for a friend. Their responses about food literacy would have been subject to biases as told by their observations, but not the perspective of a lived experience.

During the study, the students may have withheld some of their opinions and beliefs to refrain from sharing any existing or perceived unpopular attitudes and beliefs.

Further, the students may have believed that their participation and responses would prompt further action or misleading judgment among the university or the participants. The departments, gender, year in school, and undergraduate/graduate student status were not confirmed in the study, which may have helped participants feel comfortable when the study would reflect the university as a case study, rather than individually assessing specific students and cohorts.

In a large study that assessed first-year undergraduate student nutrition, physical activity, and weight outcomes, researchers found that all students were required to purchase a meal plan if they lived in the residence halls.

The survey for the study included items where the participants were to indicate if the following statements were true:

The food that I bought just didn't last, and I didn't have money to get more.

I couldn't afford to eat balanced meals.

In the past month, I had to cut the size of my meals or skip meals because there wasn't enough money for food.

In the past month, I ate less than I felt I should because there wasn't enough money for food.

In the past month, I was hungry but didn't eat because there was not enough money for food (Bruening et al., 2018).

Any participant who gave affirmative answers to two or more questions was categorized as experiencing food insecurity. The authors also studied body composition, alcoholic consumption,

and physical activity. Every participant was asked if they were a recipient of a grant from the Federal Pell Grant program. The results showed that meal patterns, perceptions of healthful eating, physical activity on campus, and mental health were related to food insecurity. However, other dietary behaviors, weight status, and physical activity were not correlated with prior or recurrent food insecurity. The authors noted that these students' diets were deficient and that the differences in food intake could not be detected. The researchers did not indicate some of the socio-demographics of the six residence halls that the study had sought to examine. The physical activities, class schedules, and internal functions of each community were not analyzed, making social desirability an issue for consideration. Results may also vary by the year of the students' enrollment in school, activities requiring their participation as part of their program's curriculum, and other campus characteristics. Further, the measures were mostly self-reported, which may have introduced biases. Finally, the researchers were limited to relationships of food insecurity with health behaviors and outcomes.

In a sample of 209 first-year undergraduate students attending a large university in the U.S., students experiencing food insecurity had significantly lower odds of eating breakfast, consuming home-cooked meals, and receiving food support from parents (Bruening et al., 2016). The students in the sample had also lived in the campus dorms. The researchers did not find significant differences among food insecurity and healthy eating habits on campus. There were no relationships identified among a student's status concerning weight, or stress. However, the researchers had found that students who rarely consumed breakfast, who rarely ate home-cooked meals, and who experienced higher levels of depression were significantly more likely to report food insecurity (Bruening et al., 2016).

Further, the students who had been reported to consuming fast foods often, and who had unhealthy eating habits off-campus were more likely to have food insecurity experiences. Consuming regular healthy meals off-campus, however, was inversely related to food insecurity issues. Students were more likely to report food insecurity issues if their parents did not regularly assist with accessing food resources. The researchers further found that students overall had higher rates of anxiety and depression when experiencing food insecurity.

The researchers found no significance among food insecurity and healthy eating on campus, or consumption of unhealthy or fast foods, alcoholic consumption, and stress. Further, the questionnaire included items addressing students' food motivations and the determinants of students' eating behaviors among environmental, personal, and behavioral factors that are likely to influence university students overall.

The items addressed constructs concerning food insecurity, eating habits, culinary skills, environmental concerns, health concerns, mindfulness, sociability, and weight. Students who lived in residence halls, or with a roommate, expressed an understanding and appreciation of the importance of eating together. Of the students who indicated frequently cooking their meals, 33% lived with roommates, whereas 51% who indicated that they do not usually prepare their meals, lived in residence halls. Among the students who reported selecting foods based on price, 34% of those living with a roommate were more price sensitive. Those who lived by themselves either in an apartment or in a residence hall were less represented. Of the students who were less interested in trying new foods or reported less variety in their diet, 41% lived in residence halls.

Relationships were found between food insecurity, place of residence/living arrangement, and reported a level of food insecurity, living with a roommate, and living alone. Of those unconcerned by food insecurity, 33% lived in residence halls, and 30% lived with

roommates (Bruening et al., 2016). Among adult students, food insecurity was related to a higher risk of poor dietary quality, binge eating, chronic disease, and lower work productivity. The prevalence of this study found anxiety and depression to be as high among first-year undergraduate students experiencing food insecurity compared to their peers. Food insecurity and public health issues might affect learning and attitudinal success, which is an area to further explore in higher education.

A different study found that among the prevalence of low and very low food security, college/university type would vary. As such, 23% of private college/university students, 33% of Historically Black Colleges and Universities, 34% of public university students and 37% of technical and vocational college students were found to experience food insecurity, with 39% of the students found to have been very low in food security (Raskind et al., 2019). Students who were not employed were less likely to experience food insecurity. Unemployed students and students living off-campus had a higher likelihood of experiencing food insecurity than those living in university housing. The more students experience food insecurity, the more likely they are to experience an increase in depression and anxiety; and a decrease in their overall GPA (Raskind et al., 2019).

The students who live on their while enrolled in college and who prepare, plan, and purchase their foods might experience differing levels of food security among their peers. Students who lack cooking and preparation skills for meals may also opt to purchase costlier or convenience foods (Gaines et al., 2014). A sample of students living off-campus while attending a public research university in Alabama found that 38.3% of students were experiencing food insecurity and had lower cooking self-efficacy and food preparation skills than students who were not experiencing food insecurity. The researchers reported that food insecurity status,

coupled with financial aid debt, contributed most to food preparation behaviors among more males than females (Knol et al., 2019). Using a four-point Likert Scale, with (1) indicating very inadequate and (4) very adequate, participants were asked to rate their skills from cooking to selection and supply of cooking appliances, time management, and financial resources. Also, using a five-point Likert Scale, with (1) indicating not at all confident and (5) extremely confident, the participants were asked to rate their level of confidence in completing tasks such as cooking a nutritious meal, following a recipe, time management, and level of cooking skills. Most students reported high food security, although about 20% indicated experiencing anxiety about their food supply. The researchers also assessed selected aspects of food insecurity among community college students asked students at two colleges:

- If their households ever ran out of money to buy food
- If they cut meals or skipped meals because of a lack of money
- If they used government or emergency food assistance programs

The researchers found that between 24-27% of students lived in households that ran out of money to buy food; 22-24% reported cutting or skipping meals because of running out of cash; 18-28% used government-assisted food programs; 7-10% reported using emergency food.

The study results did not show whether students who lived in university dormitories and who had never cooked a personal meal were at a higher risk of developing food insecurity than those who often cook.

The authors found no relationship between demographic characteristics and food insecurity status; however, the research could explain how financial aid debt varies across the different demographic representations. Additionally, the authors would better help other researchers understand how food preparation changes or continues to improve from the

beginning of the academic year, and each year after. Finally, the researchers did not indicate if the students' confidence levels changed as their cooking skills improved, or if their appliances and time management converged with purchasing better supplies and tools to prepare food as their time management improved.

Food insecurity has also affected students who are employed, participate in a campus meal plan, or seek other financial assistance. In a survey conducted by the Wisconsin HOPE Lab, now the Hope Center at Temple University in Philadelphia, Pennsylvania, researchers found that among low and moderate-income undergraduate students, 77% of those who lived at home with parents would provide monetary support to their families.

Having primary responsibilities for their family members added to the issue of food insecurity, which led to their inability to obtaining financial independence. Other surveyed students had parents who would either purchase groceries or provide them with money for food. Students with food insecurity reported receiving food-related public assistance. However, the number of students experiencing food insecurity and receiving assistance was higher than that of students receiving public assistance and were food secure (Broton & Goldrick-Rab, 2018).

Housing is another issue that affected students experiencing food insecurity, where 64% of the students experiencing food insecurity reported experiencing housing insecurity. They also believed that hunger and housing problems affected their education. Students further cited consequences such as missing classes, dropping classes, and not purchasing required textbooks. Of students who had campus meal plans, 43% reportedly experienced food insecurity and had insufficient food. Some of these same students reported not eating for a day; so that they would have enough points to last for the academic term. Other students said that they had also received free food in the past.

As it was also found in Freudenberg et al. (2013), many students have faced both food and housing insecurity. The researchers found that 24% of students in a survey had experienced food and housing insecurity. Students over the age of 21 were more likely to have both issues persistent than those who were not receiving work-study support. Further, 45% of students in the study reported having concerns about not having enough money to purchase food, with 22% having a lack of funds and were often hungry. The researchers further found that students who experience mental health issues are more likely to experience food insecurity.

In a different study (Broton et al., 2018) conducted by the same lab, the researchers surveyed students from community colleges. The researchers found no strong relationships between community college students' responses to food and housing insecurity (Broton et al., 2018). It is unknown if any of the students had transferred to four-year universities or had significant retention among students experiencing food insecurity during their first semester. The participants' programs could also be studied to analyze further the rates in which individual students enrolled in different programs experience-varying levels of low or very low food security. In this study, there is no indication if the students experiencing food insecurity were more likely to commute from far distances, or if their locations were near a grocer or food store. Further, the researchers did not suggest a relationship between food insecurity and academic performance. Racial demographics were also not found to have corresponded with food insecurity in the study.

The Prevalence of Race and Nutritional Access

Food insecurity may also be more prevalent among students of color and first-generation college students (Cady, 2014; Dubick et al., 2016; Wood & Harris, 2018). Overall, food insecurity can vary among students by race, age, and employment status. According to some

studies (Chaparro et al., 2009; Patton-López et al., 2014), food insecurity among students in colleges and universities correlates hunger with student race and income. In a 2016 Hunger on Campus report, 57% of African-American/Black students faced food insecurity, compared to 40% of non-Hispanic White students. The report states that most students who experience food insecurity worked, received financial aid, and were enrolled in a campus meal plan. Of students experiencing food insecurity, 32% had reported the effects on their educational performance; and 55% of these students did not have the funds to purchase required course textbooks (Dubick et al., 2016). White and African-American/Black students enrolled in two-year schools are significantly more likely to experience food insecurity. White and African-American/Black students enrolled in four-year schools are significantly less likely to experience food insecurity.

At the start of their first year in college, African-American/Black students' food choices are more likely to be driven by day-to-day social activities than non-Hispanic White, multiracial, and Hispanic/Latino students, such as campus activities, fundraisers, volunteerism and social engagement. The influence of a significant other was also more critical for White and multiracial students' food choices than African-American/Black students' (Vilaro et al., 2018). African-American/Black students were more likely to be the first in their families to graduate from college. They felt that their friends, families, peers, and society would hold a more profound respect for them if they earned a degree. Therefore, the motivation to earn a degree outweighed their hunger concerns. If the students in that population were experiencing food insecurity, they were also willing to make sacrifices to obtain a good education (Henry, 2017).

Racial demographics have also been found to contribute to concerns in higher education settings among populations experiencing food insecurity. Students from low-income and racial/ethnic minority families are at an increased risk of experiencing food insecurity during

college enrollment (Payne-Sturges et al., 2018). In a survey conducted by the City University of New York, about 39% of students reported that they had experienced either one of several forms of food insecurity. The researchers also found that African-American/Black and Hispanic/Latino students were more likely to experience food insecurity than Asian and White students at the same university. Further, students who supported themselves financially were more likely to report food insecurity; and students working more than 20 hours per week had a higher rate of food insecurity than those who were unemployed.

Between March and May 2016, four campus-based organizations, including the College and University Food Bank Alliance, the National Student Campaign Against Hunger and Homelessness, the Student Government Resource Center, and the Student Public Interest Research Groups, surveyed students about food insecurity. Students were recruited from 12 states attending community colleges and four-year colleges and universities. Of all the surveyed first-generation college students, 56% had reported experiencing food insecurity. Additionally, 40% of White students and 57% of African-American/Black students reported experiences with food insecurity.

Further, community colleges and the four-year colleges and universities in this study may have been in rural, urban, and suburban areas. It is important to distinguish among each community to determine the levels of food insecurity in each neighborhood. Mobility and migration patterns are also likely to influence similar studies. First-generation students and their migration patterns before entering college and their parents' and relatives' past migration are also important to differentiate between neighborhoods and food supply.

A study examining the relationship between race and food insecurity among college students revealed that 61% of African-American/Black students experienced food insecurity

compared to 32% of White students (Fetter & Gilboy, 2018). Students who identified as Hispanic/Latino or multiracial were found to experience more food insecurity. Female students in the sample were also more likely to experience food insecurity, but there were no relationships between females experiencing food insecurity to males.

Students living with parents or relatives may have a consistent food source, which helps with their food insecurity status. In contrast, those living with roommates, a significant other, or solo may have difficulty sharing multiple responsibilities, financial management, and budgeting. Such expenses as rent and utilities may be fully covered when a student lives with parents or relatives. In other living arrangements, the student might be responsible for all their expenses with no assistance. Further, if a student was also responsible for childcare, they were more likely to experience food insecurity because of the costs of taking care of their child.

Race has long been a predictor of social inequities, from access to education, residential housing, and mental and physical health (Mordechay, 2018; Williams et al., 1997). This is particularly salient in the country's largest metropolitan areas where the decisions a student makes to attend a school reflects the opportunities they will have in those communities. Demographic shifts, segregated neighborhoods, and poverty contribute to the success or failure a student may encounter; these developments are likely to intensify inequalities along racial and ethnic lines and therefore create complexities around improving academic outcomes, particularly among Hispanic/Latino students (Gándara & Mordechay, 2017; Mordechay & Orfield, 2017). As the largest minority group in the U.S., Latinos' educational attainment is a significant concern for the nation (Mordechay et al., 2019). Racial inequalities also act as structural determinants shaping access to food, and in many cases, to food that is healthy, appealing, and affordable (Maguire, 2016).

According to Helling and Sawicki (2010), when African-American/Black neighborhoods are primarily poor, the insufficient availability of retail stores affects the lack of grocers and businesses offering quality produce in these neighborhoods. The researchers also indicate that such disadvantaged neighborhoods provide less access to nutritious foods with smaller grocers. Residents have a longer commute to larger supermarkets with fresh produce than predominantly White neighborhoods. Neighborhoods with higher proportions of African-American/Black residents have more fast-food restaurants and fewer supermarkets than neighborhoods with higher proportions of White residents (Hilmers et al., 2012).

Non-fast food restaurants are more prevalent in racially mixed and White neighborhoods than in African-American/Black or Hispanic neighborhoods (Dimitri & Rogus, 2014), which influences the diet and food quality of individuals residing in those neighborhoods. Other researchers have found no difference in diet quality because of living closer to a supermarket (Larson et al., 2009; Moore et al., 2006; Morland et al., 2002; Raja et al., 2008;), but have considered food environment measures for neighborhood characteristics. Institutes of higher education may significantly differ in the types of food items they can offer on campus. Other missing analyses included the prevalence of public transportation, which would affect safety and neighborhood behaviors practiced by first-time students in large cities who are newly acquainted with the public transit system and the neighborhood with a traditional market presence.

Further, low-income, minority, and immigrant communities that are disparately affected by food production and restrictions particular to their diets and religious accordance (Neff et al., 2009) may also encounter challenges with commuting to an accessible grocer. The zip codes of such communities and their proximity to a variety of foods are of critical importance to the types

of barriers that may exist in those sectors and their relationships to diet quality and neighborhood safety (Bader et al., 2010).

Kamarulzaman et al., (2016) implicate that only several large urban cities, and only a few major university towns in the U.S., have adequate food choices for individuals following a Halal diet. Students who study at schools within areas lacking the foods needed to sustain such a diet may have limited to no access to such foods. Notably, international students who follow similar diets may also encounter difficulties with finding cultural foods within proximity to their school; they may or may not be willing to commute to a place where such options are available.

As international students assimilate to their host country's customs and culture, they are also more likely to change their practices as well as the nutritional content of their food choices. In a 2015 study, researchers found that most international students in the United States drank caffeinated beverages and skipped meals to compensate for their food insecurity. The students had indicated that traditional food items are different in the United States from their home country in terms of price and quality (Alakaam et al., 2015).

Further, traditional stores are likely to be in larger cities. Students who reside in these cities rely on public transportation, which may be limited to some geographic areas and university towns. These nonacademic barriers also affect campuses in rural areas and often have similar issues and barriers that other campuses in differing geographic areas have in terms of food provision (Mirabitur et al. 2016; Waters-Bailey et al., 2019). In such cases, students would have to rely on resources available on campus. However, students specifically practicing a Halal diet in the United States had limited access to such items on campus and in the surrounding neighborhood, which led them to consume fewer meats in their diets.

Ethnic markets and similar specialty stores are likely to be more important to specific communities and populations. A group of people who are hesitant and unwilling to make purchases at large traditional markets might feel excluded or uncomfortable because their preferred items are superseded by unfamiliar food choices and ingredients (Joassart-Marcelli et al., 2017). Such food practices may also be met with perceived stigmas within a community that makes ethnic groups feel uncomfortable and unsafe in the environments and neighborhoods in which they reside.

In the long-term, these perceptions may affect where an individual decides to attend college. On the contrary, students affected by food insecurity might not be willing to purchase items from an ethnic or specialty store near his/her campus because of perceived stigma, uncomfortable emotions, and lack of familiarity with the food items and ingredients relevant to their individual needs. It is important to consider that no single market or food store would necessarily carry the item(s) appropriate to one's needs. It is also important to know how likely a student is willing to continue to travel in the same or different distances to get the food required for their diet. From a cultural perspective, acquiring and maintaining the foods a student needs because of what they are used to consuming can affect their food preferences, choices, and subsequent lifestyle changes.

Academic Success

Understanding the depth of food insecurity and the outcomes of academic success can help researchers understand how students cope with experiences of food insecurity. A survey (McArthur et al., 2017) of 6,000 undergraduate and graduate students asked students to indicate how often they had coped with their food insecurity status. Undergraduate freshmen were not included in the sample. The researchers sought to understand if students had been affected by

difficulties with food security and academic progress with factors such as understanding course concepts, graduating on time, and students' attention span during class when experiencing food insecurity. The researchers calculated the participants' BMI from self-reported height and weight figures. Unlike other studies, this study's survey validity was determined by nutrition professors at the university who had also had professional experience with food security. The researchers indicated that about 46% of students were experiencing food insecurity (McArthur et al., 2017) but did not report if a cohort of students — i.e., undergraduates or graduate students — were found to have experienced more food insecurity by the self-reported responses.

Approximately 60% of students in the sample were either undergraduate juniors or seniors, and 90% of the total students were reported to have experienced food insecurity. Of the students experiencing food insecurity, sixty-six percent were female, and nearly 90% were classified as full-time students. An overwhelming 75% of the students had not purchased a university meal plan. The students who were reported not to have purchased a campus meal plan and experienced food insecurity might have had difficulties affording a meal plan and might have sought other alternatives. Additionally, the campus meal plan might not have met their individual dietary needs. Further, 75% of the students had personal monthly incomes totaling less than \$500, and 70% of students had received financial aid to finance their education. Additionally, the students reported having experienced food insecurity at the time of the study indicated various types of support that they perceived would help increase their access to food: securing a job, receiving additional financial aid, budgeting, eating healthily and shopping for food (McArthur et al., 2017).

The researchers found strong relationships when comparing students experiencing food insecurity with academic variables, where GPA was negatively correlated, which suggested that

students experiencing food insecurity tend to be met with less academic success. A lower percentage of students experiencing food insecurity perceived their academic performance, their understanding of course concepts, and their absenteeism rate as excellent or good compared to their food secure counterparts (McArthur et al., 2017).

The researchers also suspended collecting data between November 2015 and February 2016. They believed that food and financial resources might have been more accessible to the students during that time, which coincided with the winter break. It would be valuable to have known the courses and programs the participants were enrolled in at the time of the study. It would also have been useful to learn if engagement in a specific course resulted in significant differences from more advanced or less rigorous coursework and the underlying perceptions of classroom performance and academic progress. Further, the researchers could have conducted a factor analysis to observe if students who were consistently experiencing food insecurity saw improvements in their status during the winter break.

In a study (Davidson & Morrell, 2018) consisting of a predominantly White population at a land-grant university in New Hampshire, 47.6% of students who had received financial aid reported to also having an unlimited meal plan. Of the students reported having no meal plan, 16% of those same students had qualified for free or reduced-price school breakfast/lunch when enrolled in elementary, middle, and high school or at some point in their primary education. Approximately 4.3% of students reported they had or had currently been receiving food stamp benefits, and 42.4% reported not knowing if they qualified for the benefits (Davidson & Morrell, 2018). Only 7.2% of students reported using the services of a food pantry or other food assistance program.

The study did not find a relationship between food insecurity and GPA but suggested that students with a GPA higher than 3.0 had the lowest food insecurity. In contrast, students with GPAs between 2.0-2.9 had the highest rates of food insecurity. However, students with less than a 2.0 GPA did not experience high rates of food insecurity, which further suggests that they may have been experiencing other academic and personal issues that were not relevant to their food insecurity status (Morris et al., 2016). Students in the highest GPA range, classified as 3.5-4.0, were compared to students in a lower GPA range, between 2.0-2.4, there was a significant relationship between food insecurity and student GPA. Students experiencing food insecurity were significantly less likely to fall into the higher GPA category. Students who did not experience food insecurity were more likely to see positive effects on their GPA.

In another study examining the relationship between food insecurity and academic achievement, 38% of students experienced food insecurity at the end of the school year (van Woerden et al., 2018). The GPA of students experiencing food insecurity was lower than the GPA of students not shown to have experienced food insecurity. The sample of the undergraduate freshman students included 70% female and 50% non-Hispanic White. Overall, there was no relationship between food insecurity and retention. Some of the limitations of this study were that the number of maximum credit hours per semester for undergraduate students was not constant across students. Further, by using a cumulative university GPA, the effect of food insecurity by the end of the school year varies.

As found in Fetter & Gilboy (2018), students who reported experiencing food insecurity had a higher likelihood of either dropping out of school or reducing their academic units. Students who worked full time were also more likely to reduce their academic units than students who were not working full time. However, in some other situations and educational

environments, experiencing any degree of food insecurity does not inform the importance of students experiencing overall academic success (Meza et al., 2019). At a large public research and land-grant university in northern California, more than 8,000 participating students were surveyed about food insecurity and their GPA status (Martinez et al., 2018).

In the distributed questionnaire, students were asked to rate their level of stress, and indicate if they had ever felt any of the following emotions as a current student:

- Hopelessness
- Overwhelmed
- Exhausted
- Very lonely
- Very sad
- Overwhelming anxiety
- Overwhelming anger
- Depression (Martinez et al., 2018)

Overall, 40% of students reported experiencing food insecurity; and 93% had significantly higher proportions of poor mental health than their peers who had not experienced food insecurity (Martinez et al., 2018). Additionally, 15% of the students reported experiencing tremendous stress. Between 76–82% had felt overwhelmed and exhausted as a result of their food insecurity, and 28–55% said they had felt very sad, very lonely, hopeless, overwhelming anxiety, overwhelming anger, and depression, making it difficult to function.

On average, students in the sample were 23 years old, female, and either White, Asian, or Hispanic/Latino. Most of the students were reported to have a GPA in the 95th and 80th percentiles, which suggests that students affected by food insecurity would not let their issues,

such as food insecurity, interfere with their academic success. Other researchers used a non-random sample of students enrolled full-time in a four-year university. Many students were food secure, but 19% were classified as very low food secure, and 16% had low food security (Wooten et al., 2019). The students self-reported an average GPA of 3.41, 81% of participants identified as White, and 70% identified as female. Students with a self-reported GPA between the ranges of 3.8–4.0 were less likely to experience food insecurity. Students with a lower self-reported GPA were significantly more likely to experience food insecurity than students in the highest self-reported GPA, suggesting that academic success is more significant than food insecurity. As the GPA scores were all self-reported, there may have been data in the study, where students may have exaggerated or inflated their responses. Further, they may not have considered a cumulative GPA toward degree completion.

A student who reported receiving loans that required repayment was more likely to be experiencing food insecurity. A student who received scholarships that did not require repayment was more likely to be food secure (Wooten et al., 2019). Students who had been employed either part- or full-time were less likely to experience food insecurity than students who were not employed. Students who used personal savings as an income source had an increased likelihood of food insecurity. The student enrollment status was also not described in this study.

When controlling for race, age, gender, and ethnicity, students who were experiencing food insecurity before entering college were more likely to experience food insecurity during college. Based on these findings, having financial independence cannot be the sole predictor of food insecurity at colleges and universities. Financial independence also cannot determine whether a student had had past experiences with food insecurity before enrollment. The study did not confirm if scholarships covered tuition and ailment needs, or if students were eligible for

renewing different types of scholarship monies deposited directly to the student's account rather than the institution. There was no significance between students who participated in a campus meal plan and those who did not (Wooten et al., 2019).

The same students in the study increased spending on non-essential items. They also had a significantly lower likelihood of food insecurity. However, when students increased spending on essential items, they were more likely to increase food insecurity. Students with food insecurity may have had more disposable income or had support from parents or relatives to pay for their essential needs. However, the study does not identify essential needs and items and does not indicate the value or utility of such necessities across students. For example, a student enrolled in one program might be required to purchase different books and supplies for their course requirements than a student with other curricular requirements. Non-essential items could also be referred to optional course requirements, which students determine for their own academic needs. The expenses incurred in this sample may be related to other studies whereby employed students distributed much of their income to family members and others who were overlooked. Further, the results did not explain if some of the employed students were part of any federal work-study programs.

Current living conditions and previous household characteristics were prevalent before college entry and are also essential to the analysis and understanding of food security cycles in a period. Since the study used a self-reported survey method to collect data, biases could have been presented. The researchers also confirmed that the response rate is low compared to the university population. They also reported a higher percentage of female participants in the sample, which is more than the overall university population (Wooten et al., 2019). The use of nonrandom sampling obtained in this study may not be representative of the university

population, which may have resulted in selection bias. The recognition of student awareness about food insecurity and environmental issues around campus also explains how involvement in specific campus organizations and programs helps raise awareness about the university setting. Additionally, students can understand the role of stakeholders and university leadership. These factors help support campus needs and emerging areas of concern that affect student academic success.

Students from two undergraduate English courses, and a group of students in service-learning programs, in a public research university in Ohio, surveyed their campus about student food insecurity (Twill et al., 2016). With more than 3,700 student participants, 49% stated that they had experienced some degree of food insecurity (Twill et al., 2016). As an overall response to the survey's results, the student government association proceeded to ask school administrators to provide space and resources for a campus food pantry to alleviate the issues of food insecurity and hunger.

During the first two years of pantry operation from 2011-2013, there were a reported 870 visits to the pantry, of which half were repeated visits. African-American/Black students made up 50% of visitors, followed by about 26% of White students. Pantry users were predominantly female (69.9%), enrolled full-time (90%), lived off-campus (53.3%), or were reported to have lived with children or a spouse/partner (17.6%). It was further reported that the largest college at the university, the liberal arts college, had the most pantry users. First-year students were found to have used the pantry somewhat more than their upperclassmen peers have, and 19% of pantry usage was made up of graduate students. Other statistics about the patrons included that 45% were unemployed and could not afford food and had difficulty with budgeting.

Pantry users who were employed also reported problems with being able to afford food and manage a personal budget. Scholarships were provided to 26% of students. However, it is unclear if the scholarships were deposited directly to student accounts for their expenses or used strictly for tuition fees. Other students had received financial assistance from their families, and 62% of students used loans to cover their expenses (Twill et al., 2016). Other pantry users also lived with roommates, parents/relatives, or alone, indicating that the pantry served a variety of students who needed food assistance. Students are also responsible for staffing the pantry to ensure their peers are comfortable with using the service.

Other student-run initiatives include *Swipe out Hunger*, a program launched in response to helping students and dining halls implement systems whereby students could donate their extra meal points to other students who need meals. As another temporary solution, some students have developed mobile applications or websites to enable contributing students to use social media and related technology capabilities to donate or share meals with other students. For example, in 2015, students at Columbia University in New York created a mobile application called *Swipes* to accomplish the same goal of sharing meals and delivering access to information about campus resources that offer help with food assistance (Chiu, 2015). However, it was reported that after a year of launching, the application had not improved the consequences of food insecurity, and had non-functional features and systemic bugs in the app.

At Tufts University, a private research university in Massachusetts, students established the *Swipe it Forward* program for students would learn to feel more comfortable with communicating their needs and food insecurity concerns. Students also can acquire food through donated meals from other university students who have not used their meal plan points during an academic term (Mayor, 2017). At Northeastern University, another private research university in

Massachusetts, students can opt-in to receive texts to get edible leftover food at the campus that would otherwise be discarded (Kornwitz, 2017). One barrier to this opportunity is that some students may not have access to mobile devices to receive text messages or other electronic devices. Also, the cellular carrier may have different fees for receiving text messages that might affect how students hear about the program.

Other problems might consist of downloading a compatible mobile application, using all the apps' features, and having the technological capability for messages continuing to be identified as spam under unreliable networks. Using a university computer may violate some of the school's technology usage policies. It may expose risk in tracking individuals in need of food assistance and students with chronic food insecurity. Such programs may result in a series of unintended consequences for students concerned about revealing their identities or sharing their personal experiences about food insecurity.

A study of students at a large, land grant university in Appalachia found that about 36% of 456 participants were experiencing food insecurity (McArthur et al., 2018). The study looked at families and campus food insecurity among freshmen students. An online questionnaire contained socio-demographic items that measured food insecurity, academic progress, coping strategies for accessing food, and social support. Participants primarily reported housing and food insecurity. About 42.5% of students who experienced food insecurity believed their access to food had worsened since starting college.

Students who were reported to have been food secure were also found to have had more significant academic progress and had perceived individual eating habits since starting college as healthy/very healthy and perceived their health status as good/excellent. Other students in the study reported requesting assistance with job opportunities, affordable meal plans, financial

management, and healthy eating (McArthur et al., 2018). Thirty-two freshmen students also reported housing and food insecurity (McArthur et al., 2018).

To identify relationships between students who had experienced food insecurity in households they grew up in and students discovering food insecurity on their own during their time on campus had not been assessed. It is then suggested that student food insecurity is more likely to begin during the first year of college, so interventions are needed to increase food access. Both institutional and community efforts would be necessary to approach such a goal to encourage students to use campus resources, as well as community partnerships if there is a lack of services among campus.

Another study consisting of students attending a university in central Appalachia found that food insecurity was highest during undergraduate sophomore and junior years, and lowest among graduate students. Students who lived off-campus were found to have experienced more food insecurity than students who lived on campus (Hagedorn & Olfert, 2018). Like other studies, biases and inaccurate data may have been reported as students may have felt shame and embarrassment from reporting actual and truthful personal experiences.

As a coping strategy, students may have chosen to edit some of their responses because of overwhelming affirmation toward a specific position on their health status. Further, rating individual health status based on descriptions, such as poor or fair, does not describe solutions to remedying some of the barriers persistent in overall health and wellbeing as they relate to food consumption. It also does not indicate food insecurity status. The participants might have interpreted food insecurity as a personal term related to individual lifestyle and dieting, rather than its actual terminology.

The Rise of Campus Food Pantries

Campus food pantries in the U.S. have increased within the past decade. In 1993, Michigan State University (MSU) established the first college food pantry on campus, named the *MSU Student Food Bank*. In 2012, MSU collaborated with the Oregon State University Food Pantry and established the College and University Food Bank Alliance (CUFBA) to assist campuses with starting their food banks and addressing student hunger. As of 2019, the CUFBA has more than 700 registered member institutions (MSU Student Food Bank, n.d.), of which about 253 members have established operating food pantries on campus.

Being a registered CUFBA member means an institution seeks information and assistance about food insecurity issues and is considering developing a food pantry on campus. There are also campus food pantries that have not registered with the CUFBA, which indicates a more significant presence of food pantries at institutes of higher education. The increase in institutional CUFBA membership portrays the urgency of food-insecurity issues affecting college campuses. While only a temporary solution, campus food pantries help students seek different options for their food insecurity needs without encountering some barriers to seeking aid elsewhere. Community food banks also help to relieve unanticipated situations and employ volunteers and staff members to manage the pantry's operations.

Despite the growth, the success of food distribution services is as successful as its nutritional content of food, an understanding of the needs of patrons, and the knowledge of the prevalence of hunger and food insecurity. Since there is no preliminary requirement to travel off-campus, campus food pantries may be an appropriately convenient option for students to access the pantry. Food pantries also increase student patronage likelihood compared to community-based programs when identified as a student resource or service.

Campus pantries also reduce the risk of identifiable personal information that would potentially be exposed through mobile applications or websites promoting sharing meal plans. According to Cady and White (2018), campus-based pantries are stocked through direct purchases and food donations. If a pantry purchases food, a partnership with a state or regional food bank can be developed whereby campuses partner with a nonprofit agency or an organization that enables the campus pantry to be part of the food bank network through the sponsorship. Food donations are also provided by local agencies, campus student groups, regional, national, and multinational businesses, university alumni, faculty, and staff.

On campuses where donations are the primary source for stocking the pantry, there are often annual events such as fundraisers, galas, and special occasions with large amounts of the food supply. However, food supplies from donations are less predictable, and some of the donated food may be expired or in an undesirable condition prohibitive for consumption (Cady & White, 2018). Another issue with some food pantries is the efforts of staff members to check the quality of the donated foods to ensure they are in nonperishable conditions.

Campus pantry personnel and campus officials often collaborate with academic departments to raise awareness about the issues and problems facing students dealing with food insecurity and promote programs that support these students through other campus facilities. Empty bowls fundraisers are also typical supporters of campus food pantries where students enrolled in art and culinary programs donate supplies, such as ceramic bowls, and host events where admission fees are awarded to the campus food pantry (Price et al., 2019).

Campus pantries are in a variety of spaces around campuses. Some common locations include student affairs offices, counseling centers, health centers, academic divisions, and administrative divisions or units. The social environment contributes most to health disparities

than the physical environment, such as buildings and the absence of sidewalks (Keith et al., 2015). It is essential to consider that even if there is adequate availability of food within short proximity to a college campus, a lack of transportation and a lack of safe sidewalks will affect how students acquire their meals. Students who cannot commute to a grocer around campus neighborhoods would see no immediate advantages to their community's food environment. In such cases, a food pantry would be a better or more convenient solution, assuming that the campuses and the food pantries are in areas where all students have safe and accessible transportation modes. However, it is as essential to consider how such conditions and spaces around campuses affect students with disabilities and students with barriers to traveling from place to place.

Pantry staff members often have several responsibilities in addition to leading their current positions such as daily pantry operation, familiarity with rules, procedures, and protocols of the pantry's management. The staff may sometimes be new to managing pantry facilities or might have little to no experience and knowledge about food insecurity, student resources, and community resources (Price et al., 2019), which may make the pantry's services less effective. Many food banks require member pantries to serve the public as part of the food bank network, but many universities may not be willing to open their campus food pantry services to the public (Cady & White, 2018).

A preliminary survey of students from the student government, the college honors program, an undergraduate level English course, and students in the social work major, at a four-year public research university, was distributed to assess whether a food pantry was needed on campus. The survey served to determine if a campus food pantry would help students with food insecurity issues (Reppond et al., 2018). Social work and undergraduate-level English class

students were recruited for this study because the researchers believed that the individuals enrolled in those programs would have more familiarity with food insecurity issues than their peers. They also believed that some related problems on campus would motivate students from those programs and classes.

A limitation of this study is that classes were randomly selected. Through the introduction of the course instructors who were willing to allow the researchers to distribute the surveys as they perceive relevant to their course curriculum, which could incur selection. Having an established and professional working relationship with the researchers or having substantive knowledge about food insecurity and student wellness could be beneficial to the study. Still, the participants would likely have had more functional experience and expertise in the subject than their colleagues from other campus programs. Another limitation is that the surveys may contain insufficient or misinterpreted responses because they feared to have their answers seen by peers, which would likely affect their mental health.

The study did not link data to individual student academic performance or GPA. GPA was an accurate assessment of the changes in academic achievement for students, such as time to complete a degree, class participation, and frequent absenteeism, because of food insecurity challenges. Nearly 150 students responded, of which 48% reported experiencing food insecurity, whereas 64% of participants knew of a friend or classmate who had experienced food insecurity (Reppond et al., 2018).

When asked about campus food pantry patronage, 60% either agreed or strongly agreed that they would use the pantry if necessary, and 94% indicated that they would refer others to the pantry (Reppond et al., 2018). While it was agreed that a campus food pantry could successfully operate because many students needed such a service, the school preferred distributing food to

students who did not need food assistance. The campus did not want to risk probing questions to a student who needed food assistance because they believed the process would result in the student being turned away from receiving food over the policies and matters surrounding their circumstances.

Researchers at another public university in Florida sought to examine the negative social stigmas that may prevent students from using the campus food pantry. Two hundred sixty-three undergraduate students were surveyed in an introductory sociology course (Loftin, 2013). The survey responses revealed that approximately 24% of students have had to skip meals because they could not afford food, and about 14% needed food assistance. Campus food pantry awareness was high. About 75% of students reported knowing about the campus food pantry, and 63% knew where the pantry is located. Still, the students generally felt embarrassment and shame in accessing its services.

The same researchers also distributed 51 different surveys to students who would consistently use the pantry for food assistance. The study also sought to consider the students' living arrangements and their financial history, and their families' socioeconomic status. Gender and age were used to assess whether they influence perceived stigmas. The participants were asked to indicate their difficulty accessing the pantry on a 5-point Likert scale ranging from “very difficult” to “not difficult at all.” Participants were also able to explain any factors that may have prevented them from getting assistance from the pantry, become aware of the pantry, and share information about their status with others.

About 66.7% had worked while being a full-time student, with 58% of those having to have had worked full time. Further, 58.8% of the students lived off-campus, 12% lived with parents, and about 87% lived with roommates (Loftin, 2013). More than half of the students

lived off-campus, and almost 70% indicated that the pantry location did not affect their access to the pantry. Further, about half of the students reported spending the most money on food, followed by paying for bills and gas; and more than 70% indicated receiving assistance from their families (Loftin, 2013). When asked how they had heard about the pantry, 35.4% said through friends and word of mouth. About 17% reported having walked by the pantry while on campus, and 21% had family members who had received food stamps. Over 40% of the participants were freshmen, 31% sophomores, 16% were juniors, and almost 10% were seniors.

In a mixed-methods study (Paola & DeBate, 2018) observing food pantry users ($N = 221$) and the relationships among food insecurity, diet quality, and academic achievement, most patrons self-reported as female, White, or Hispanic/Latino; and were primarily undergraduate juniors or seniors. About 53% of the participants were employed, and 14% reported to also having a campus meal plan. When asked if they were treated professionally by their campus food pantry staff and volunteers, 90% strongly agreed. Having a very good/good experience when visiting the pantry also increased their likelihood of returning to the pantry whenever needed, and 87% strongly agreed/agreed that the pantry provided the foods they needed that they would otherwise have to have skipped.

The same participants agreed that the pantry's resources provided them the opportunity to allocate funds toward rent, utilities, and medical needs. All the surveyed students said that the food pantry's resources contributed to their academic success. About 55% of patrons used the pantry's services more than once in an academic semester, and 44% used the pantry once. Among self-reported participants who were experiencing food insecurity, exactly half were single time pantry visitors, and the other half were recurrent visitors (Paola & DeBate, 2018).

The researchers concluded that there was no relationship between single/frequent visitors and socioeconomic characteristics. The study also did not reveal how students using other services and resources benefited from the food pantry or showed any significance in their academic development and success. Recurrent visitors also did not report if they were also using other services, or if the support of the pantry helped with their academic and personal growth. As the survey was self-reported, there may have been biases in the responses. Further, the survey did not include questions about the pantry users' living situations, limiting the type of analysis for this study.

Another study observing food pantries and accessibility on campus found that one of the most concerning challenges in starting a food pantry is having adequate physical space on campus. Participants in the study described how some of their institutions would not permit space on campus for the pantry. An additional challenge related to finding space on campus was finding support for establishing a food pantry. Being able to convey the need and importance of a food pantry on campus was difficult to promote. The level of urgency needed to engage various divisions, departments, and faculty and staff were lacking across the institutions (Gupton et al., 2018). In three months, the pantry recorded 827 transactions, of which 39% were repeat patrons, and had served 504 unique students.

Of the 39% who had used the pantry more than once, overall visits ranged from 2 to 17 trips. During the academic year, 20% of pantry users reported using the pantry multiple times. Data on student status and residency were not reported, but the researcher's analysis revealed that 62% of its patrons were graduate students, and 38% were undergraduate students. Further, 71% were international students, 46% were living alone, 12% were living with one other adult, and 16% lived with three or more other adults. The highest percentage of students responded that

they occasionally experienced food insecurity, whereas 62% reported an ongoing need for food assistance, and 7% reported that they experienced food insecurity very frequently (Buch et al., 2016).

In terms of pantry usage patterns, the highest number of students visited the pantry during its first week. For the remaining weeks of the fall semester, the pantry served an average of 35 students per week. During winter break, the pantry opened for two days and served only 13 patrons. During the spring semester, the pantry served 28 students per week through the end of the academic term. During the summer, open pantry hours were reduced to one day per week, and during that time served an average of 12 patrons per week. The first week of operations was likely to be the busiest period of service, while students were becoming acquainted with campus facilities and adjusting to new changes on campus. It is important to identify repeat patrons of the pantry throughout the school year to determine if persistent food insecurity affects certain groups of students or other factors contributing to the types of food pantry recipients and their food security needs.

A lack of awareness of the pantry, the location(s), and hours of operation are all contributors to the success or failure of the service. The potential stigma that may prevent some students in need from seeking help on campus may also deter students from using the services offered by their campus food pantry. An internal issue that campus food pantries may have is a lack of variety and perceived or desirable foods available at the pantry, and a lack of cultural inclusivity present in the food choices. For example, students may have dietary, ethnic, medical, or other personal preferences and restrictions that require more selections of food options than items available at the campus food pantry.

A lack of select items and a lack of knowledge about preparing some foods may also affect the pantries' success and effectiveness (Buch et al., 2016). The pantry location, setup, and the availability of foods and supplies affects how students are served. The pantry's location, size, and space may vary and affect the types of foods and supplies that can be stocked and distributed. Location limitations can also change or limit the number of patrons who can use the pantry's services without violating safety hazards.

Study Contribution

The existing literature offers limited insight into how food pantries help students in need of food assistance. Much of the literature suggests that students experiencing food insecurity have been facing other academic and personal challenges while navigating their individual college experiences. The literature further suggests that campus food pantries are just one solution to different ways of approaching the issues surrounding food insecurity on campus. This research's primary objective was to assess the influences of the campus food environment as represented within the campus food pantries.

Chapter 3: Methodology and Procedures

Theoretical Framework

Food policy and current food systems are central to understanding food insecurity and the cultures and populations that are affected within a community. The U.S. food system is interconnected within a global system embedded across non-governmental organizations and institutes of higher education. Practicing respect for individuals' food preferences and dietary needs is essential to understanding how social and political systems affect the community. This study is conducted from a U.S. perspective while recognizing the global food system; and is guided by organizations' spatial complexity. Spatial complexity refers to how an organization is shaped by many dynamics within the food system, changing the local context as impacted through space and time (Nesheim et al., 2015).

Research Approach and Design

The purpose of this study was to determine the predictors of food insecurity among college and university students. A quantitative approach was the most appropriate choice to collect data from a geographically dispersed population and generate a sample size large enough for statistical purposes. According to Creswell (2013), quantitative research is conducted by selecting a research topic, asking research participants questions with quantifiable answers, and using statistics to analyze the responses objectively.

While quantitative research may prevent researchers from fully understanding the reasons and consequences of an occurrence, it is useful to determine the extent of the problem. The quantitative approach assisted with the exploration of this study about the prevalence of campus food pantries. The effectiveness of on-campus food pantries could also assess the extent to which higher education institutions advance student success and engagement.

While it is difficult to understand the rate of food pantry usage across every institute of higher education, some insights can be used to assess how such campus food pantries meet student populations' dietary and nutritional needs. They can also be used to understand how they have improved student wellbeing. When students feel comfortable with the knowledge, skills, and resources they have acquired earlier in life, they can create more opportunities for themselves and their communities.

Participants

The sample included employees who manage their campus food pantries at 54 four-or-more-year public universities in the United States. To identify the campus food pantries, the researcher used an online listing compiled by the College & University Food Bank Alliance (CUFBA). The CUFBA online listing was selected for the size and scope of its classification of colleges and universities with functioning food pantries on campus. The researcher chose to sample public institutions of higher education to obtain a broader understanding of how accommodations for students are managed within the perspectives of stakeholder perceptions, and the importance of student success as a concern for public health outcomes.

To identify the institution type from each listing, the researcher checked the U.S. Department of Education classification of higher education institutions. The research participants are defined as pantry staff members who are at varying levels of service at the university and who currently oversee or manage the operations of the pantry. These roles include Dean of Student Affairs, Director for Student Success, Advisor, Student Government Association President, Coordinator for Student Affairs, and other professional titles consistent with their campuses' classifications.

Human Subjects Considerations

The researcher had completed Human Subjects Training in 2017 under the requirements set by Pepperdine University and was certified to conduct this research upon approval from the Graduate and Professional Schools Institutional Review Board (IRB). An application for Exempt Research was submitted to Pepperdine's Graduate and Professional Schools Institutional Review Board (GPS IRB) with rationale for the study meeting criteria for Category 2 of the Federal Regulations for Protection of Human Research Subjects (45 CFR 46), with approval granted to the researcher on November 15, 2019 (Appendix A).

The researcher took all the necessary steps set by the IRB to meet all applicable requirements. No research had been initiated without the review and approval of the IRB (United States Department of Health & Human Services, 2018). There were no more than minimal risks to participating in the study by responding to a survey about the food pantry they manage on their campus. Minimal risks associated with this study included discomfort during the study about the research topic, sensitivity toward the student population, university community, and campus resources. The minimal risk was common to normal activities associated with survey completion. No personally identifiable information was gathered to put any participant at any risk of physical, emotional, or financial harm.

The research participants were provided with the IRB-approved information sheet that included the researcher's contact information and the GPS IRB for inquiries related to the study and information about their general rights as a research participant. The information sheet was distributed via email in a recruitment letter (Appendix B) to prospective participants to volunteer to agree to participate as a research participant in the study. The information sheet included the

study's purpose, the duration of the project, research procedures, alternatives, risks, and benefits to participation.

The invited research participants had the right to opt-out of the study at any time without penalty. A refusal to participate did not result in a loss of benefits to which the participant was otherwise entitled. Participants were not subject to the waiver of any legal claims, rights, or remedies because they participated in this research study. The alternative to participation in the study was not to participate or respond only to the items in which the participants felt comfortable. There was no compensation for participation.

The participants' rights and welfare were taken into full consideration to ensure that they understood what they were signing up for throughout the research process. The researcher also took all steps necessary to protect the confidentiality of all participants. All the participants' information has been entirely de-identified, and pseudonyms and numeric codes have been used to ensure privacy. A separate document has been kept linking the participants' aggregated responses with a series of codes to distinguish each survey. No identifiable information had been collected in the survey instrument. Any identifiable information obtained in connection with this study has remained confidential. The complete files and electronic records connected with this study will be maintained per applicable state and federal laws; and have only been accessed by the researcher.

Instrumentation

Copyrighted or legally protected instruments are neither included nor endorsed in this study. The researcher was interested in surveying campus professionals who manage campus food pantries at public colleges and universities in the United States. A web-based questionnaire was distributed to all participants in this study. The questions were adapted from the Food Pantry

Data Collection Tool, which was shared with the researcher by Dr. Sean Lucan, M.D. (S. Lucan, personal communication, June 14, 2019). Dr. Lucan is an Associate Professor in the Department of Family and Social Medicine at the Albert Einstein College of Medicine in New York and is a co-author of a peer-reviewed study examining food insecurity and food pantries in a borough of New York City in the United States (Ginsburg et al., 2019).

In another study conducted by Dr. Lucan (as cited in Bryan et al., 2019), the nutrition quality of foods was also surveyed at food pantries, such as form (fresh, refrigerated or frozen, and shelf stability); item source (donation, corporation, food bank); and food group category (fresh produce, processed food, or whole-grain products). The overall nutritional quality of items was determined and analyzed using qualitative and quantitative methods. The questionnaire included questions about the acquisition of food, inventory, food safety procedures, and operation hours. The items addressed included constructs of environmental concern, the convenience of the location(s), regulations, and food insecurity.

The questionnaire was modified and revised by the researcher to reflect the research questions better (Appendix C). The questions about macro and micronutrients of food items offered at the food pantries were included in determining how the nutritional quality of the available food items affects the amount of caloric intake per student. A student might visit the pantry multiple times with the hopes of getting something to eat. However, they could leave without taking any food items because they could not find what they need.

The food pantry might not offer every students' needs or could be limited in their availability. The complexity of the availability of cultural foods and other types of foods that a student might need for their diet might be virtually impossible to obtain. A student may want to visit a pantry and take items even if they are not experiencing food insecurity. They might also

feel embarrassed about their food insecurity needs, so they will choose food items that they believe would not result in judgment, criticism, or questioning from the pantry staff members or peers.

Likert-type questions, including the level of macronutrients and micronutrients available, inventory consistency, and the volume of pantry users, were included to understand how various campus food pantries make efficient use of their resources and check the overall quality of available foods. Open-ended questions were included in each category for participants to indicate the areas that may not have been represented in the survey. The researcher also included qualitative questions to provide depth to the survey responses. The questionnaire is critical to obtaining information about the prevalence of campus food pantries, and understanding how they might mitigate students' food deprivation, and adequately identify students' nutritional needs.

Pilot Study

The researcher conducted a pilot study to clarify the instructions for taking the survey, the length of time to complete the survey, and the use of clear and appropriate language in the questions. The pilot study also helped with identifying discrepancies persistent in the questions as well as any explicit errors or omissions. First, to ensure the validity of content within the context of higher education, and the consistency of data collection and analysis procedures, the researcher distributed the survey to ten faculty and administrative officials at Pepperdine University based on their subject matter expertise. Subject matter experts included staff members of the campus food cabinet, faculty members of the education division, nutritional, health and wellness staff, and student success and student affairs professionals. Some of the participants ($n = 4$) also held multiple positions on campus.

Participants were contacted via email and were asked to provide their feedback directly to the researcher after reviewing the online survey on Qualtrics software. Eight of the ten individuals provided their feedback about the content of the survey. One staff member referred the researcher to another colleague with subject matter expertise, but the colleague did not respond to the invitation. The results from the survey were used to develop the next iteration of the questionnaire. The results were also used to inform the researcher about improving the instrument. The subject matter expert participants recommended the following considerations to the researcher:

1. A question about micronutrients and macronutrients would be misinterpreted and not effectively capture responses that would align with the purposes of the research study ($n = 6$).
2. Define food insecurity in the survey ($n = 4$).
3. Some of the response items would not be representative of food pantries overall when comparing refrigerated and nonrefrigerated food items ($n = 3$).
4. Many foods kept beyond their expiration dates are edible and in acceptable condition; therefore, using a question about the number of expired items would neither help support the purpose of this study nor extend contributions to the researcher's statistical analysis ($n = 2$).
5. Three distinct questions in the survey had overlapping categories as response options ($n = 2$).
6. The decision to include a question about food manufacturing is a global activity that could not be easily contextualized from a U.S. perspective ($n = 1$).

Other suggestions included phrasing some of the questions differently for clarity and using a different multiple-choice option for specific questions, which were considered in designing the survey iteration.

Next, the pilot study was conducted on October 2019, by administering the survey to a group of seven individuals consisting of doctoral students, university staff, and alumni of a doctoral program in education from the researcher's department. The participants were asked to provide their feedback on the survey, articulate their reactions, comments, concerns, and suggestions; and indicate if any questions appeared ambiguous or redundant. The questionnaire included a website address hosted by Qualtrics software for participants to complete the survey online. Participants were asked to respond with their feedback via email. In one week, 100% of the invited participants completed an alternate link of the survey that had included the revised questionnaire. No follow-up or reminder message was required by the researcher, which suggested that the survey is reliable.

On average, the amount of time spent taking the survey was 7.5 minutes, which is a recommended time for preventing prolonged symptoms of cognitive fatigue during participation. There were no errors or difficulties with navigating the survey; however, 42% of the participants indicated that they would have preferred a progress bar included in the survey to monitor the time they would have remaining for completion of the survey.

The reported data were used to determine that participants of the actual study would feel that the instructions are understandable and that the survey could be completed within an appropriate amount of time. The pilot study data was maintained in a separate spreadsheet throughout the study and has been permanently destroyed. The participants of the pilot study

were not included in the sample of the main study. Their responses have not been included in the results/discussion sections.

Data Collection

The researcher emailed 100 prospective participants using the publicly available contact information listed on their institution's website. Participants were asked if they would be willing to complete an anonymous survey that would take approximately 10-15 minutes. The survey was distributed using an anonymous link via Qualtrics software. Reminder emails were sent to non-respondents and individuals who had agreed to participate but had not provided their consent form.

An information sheet was provided to research participants to ensure they understood the voluntary nature of participating in the study. Because all the survey responses remained confidential, the information sheet allowed the researcher to collect information about the participants' type of institution, such as graduate-serving or undergraduate only, for the descriptive analyses of the study. Participants signed and returned the information sheet to the researcher, which allowed the researcher to assign codes to their institutional affiliation.

According to Schaefer and Dillman (1998), the average response rate for electronic surveys with a single contact is about 28%; and a response rate between 20-30% is considered highly successful for online surveys in which there is no prior relationship between the researcher and the participants (Cook et al., 2000). A response rate of 10-15% is more likely among distributions when no follow-up reminder is initiated. To obtain a higher response rate, the researcher sent one weekly reminder to the invited research participants following the initial invitation to participate.

Personalization is also an important element in increasing the response rate in surveys. A personalized recruitment letter addressed to a specific individual further helps to increase the response rate by showing each participant that they are an important part of the study, and that their responses are individually unique and essential to the research process. Personalized messages also help the recipient and inbox filters with identifying spam or junk messages that would likely result in a low response rate. The researcher ensured that each invitation was personalized to the invited research participants; and conducted follow-up with all respondents.

Data Process and Analysis

The data in explanatory research are primarily quantitative and require statistical testing to establish validity in relationships (Ivankova et al., 2006). Immediately after the data collection period, the researcher compiled all survey response into a digital spreadsheet using Microsoft Excel software. The researcher checked the responses to ensure that duplicate surveys were not submitted. Duplicate entries were ruled invalid, and those that appeared suspicious and consisted of unverifiable responses were ruled as spam. None of the participants submitted a request to the researcher to resubmit their responses. The benefits of using the Qualtrics software for this study included discarding entries that were not usable. Additionally, participants have the option to retake the survey using an integrated feature.

Since there were no missing responses/values, the researcher did not check for any existing differences in the sample between the datasets. The researcher used classifications for individual food items reported in each survey, the condition(s) reported of each item, and the source of confirmed food items. These findings helped the researcher understand if food insecurity could have any specific implications when considering the quality of foods distributed in the pantries and its impact on serving a multicultural and diverse student body.

To examine the research participant's overall perceptions of food access and the local food environment among their institutions, the researcher contrasted these data with the selected municipalities. The researcher sought to locate differences between the populations and interpret relationships that exist in physical and social environments. Afterward, the researcher counted the number of food items offered at each pantry and compared it to all other pantries in the sample. The analysis identified the types of food items available and the items received through different food sources, such as donations. Since the response rate was greater than 35%, the researcher was not required to separate neighborhood analyses from each municipality represented in the sample.

To understand the most significant factors contributing to the growth of campus food pantries, the researcher conducted select case studies to assess specific food destinations of the campus environment and demographic composition. To gauge the extent to which campus food pantries have helped alleviate food insecurity among students, the researcher focused on campus food environments and the ethnic, racial, and geographic composition of select neighborhoods and the retail food environment.

Spatial distribution and food consumption have been generally studied across different communities in the United States; but they have not been studied in higher education settings. Specifically, the types of specialty stores and surrounding food retailers near college and university campuses had not been researched. Specialty stores were essential to this study's analysis because they portray a role in defining the cultural norms of food consumption in various regions of the United States. Additional categories of food retailers included organic, natural, vegan, vegetarian, Kosher, Halal, and select food items offered in specific retail and

neighborhood locations, such as barbers, laundromats, department stores, street vendors, sparsely located vending machines, and farmers' markets.

Limitations

The quantitative approach for this study may not adequately address the extent to which campus food pantries help solve food insecurity at the student level. The universities in the study are located among geographically dispersed populations. The differing student and neighboring demographics across each campus and the local food environments, and the types of public institutions included in the sample affect how various student resources are used throughout campuses.

One limitation of the data collection is that web-based research is subject to errors, such as missing information or overestimating specific neighborhood data. Additionally, business locations identified on an official website, city directory, or search engine, might not have an updated directory with current contact information for verification to validate food sources. A retailer may have changed its location or have been closed for a long period of time. A map depicting the specified geographic area may not accurately reflect the exact locations of the food stores to the proximity of the institutions, which would poorly represent the actual food environments. Also, the data obtained from the USDA and food destination data collected from the USDA Economic Research Service are frequently updated.

The researcher honors each municipality's jurisdictions in which every campus in the sample is located. Because of each institution's cultural and ecological differences, the results may not be indicative of other food cultures, characteristics, and lifestyles among a specific community or region in the United States. The broad categories of food items would also make it challenging to infer meaningful information about the pantries' overall quality and function; but

are used to identify demographic and environmental changes in leadership, policy, and social cohesion.

An additional limitation was that some of the campus employees/volunteers who manage the campus food pantries in administrative or functional roles had limited knowledge of the pantries. Others had just assumed their positions with the food pantry, which limited the opportunity to participate in follow-up questions if necessary. A final limitation is that the study cannot track how the foods are used/consumed when students leave the pantry. Students were not surveyed in this study, which limited the certainties of the causes and likelihood of food insecurity issues at individual campuses and specific geographic areas affecting student populations. The researcher also did not visit any of the food pantries in the sample; and relied on the information provided by the research participants.

This study further did not include findings of individual shopping preferences or dietary food preferences found in select communities. Such data is limited and cannot be accessible from a quantitative approach. Lastly, these results are from each participant's analysis encompassing the beginning of an academic year, which required them to provide their responses from previous academic school years and their pantry's current and past operations. Despite these limitations, some of the more pertinent relationships among food insecurity and campus food pantries are explored.

Chapter 4: Presentation of Findings

Overview

Survey invitations were sent to 100 public four-year colleges and universities in the United States. The researcher offered prospective research participants with the opportunity to participate in the study. Fifty-four food pantry directors, coordinators, managers, student graduate assistants, faculty, and staff from 54 colleges and universities participated in the study between November and December 2019. Approximately 98% of the submissions ($n = 53$) were usable; and one survey was returned partially completed.

The participants represented food pantries at sea-grant universities ($n = 7$, 12.96%), space-grant universities ($n = 27$, 50%), and land-grant universities ($n = 10$, 18.52%). The sample represented undergraduate-only ($n = 3$, 5.55%) and undergraduate and graduate-serving institutions ($n = 51$, 94.44%). Participants also represented 30 states in the U.S., with the majority located in cities and municipalities in California ($n = 6$), Georgia ($n = 6$), New Mexico ($n = 3$), and Texas ($n = 3$).

The participants served in different roles, including Pantry Advisor ($n = 2$), Pantry Supervisor ($n = 6$), Pantry Manager ($n = 4$), or Pantry Director ($n = 2$). Among the participants serving as a Pantry Coordinator, about 18% served as a Community Food Security and Food Security Project Coordinator. The sample further consisted of faculty and staff members who were either a Pantry Co-Chair, Chair, or President ($n = 3$, 5.56%). Thirteen professional staff members did not have an official title but served in operational, managerial, marketing, and developmental responsibilities at their campus food pantry. In that same group, one staff member indicated that a faith-based institution in the community manages the university's food pantry.

Participants having additional responsibilities to managing the campus food pantry included a Director of Student Affairs, a Director of Student Life, a Director of Student Support Services, an Assistant Dean of Students, a Basic Needs and Wellness Assistant, a Basic Needs Administrator, an Assistant Director of Student Success, and a Sustainability Program Manager ($n = 8$, 14.8%). Student-workers who served in their campuses' food pantry(s) included a coordinator, an assistant, and interns ($n = 6$, 11.1%).

Descriptive Analyses

A little more than half of the study's research participants had worked at their campus food pantry for 1-5 years ($n = 32$, 59.26%), while the other half had worked at their campus food pantry for either less than 1 year ($n = 16$, 29.63%), 6-10 years ($n = 4$, 7.41%), or 11-15 years ($n = 2$, 3.71%). Most of the food pantries had been in operation for less than 3 years (0-11 months, $n = 6$, 11.11%; 1-4 years, $n = 26$, 48.15%), and others for more than 5 years (5-10 years, $n = 19$, 35.19%; 10+ years, $n = 3$, 5.56%).

On average, the food pantries in this study maintained daily operations in an academic year for approximately 18 hours a week, including once a week ($n = 3$, 5.56%), 2-3 days per week ($n = 17$, 31.48%), 4-6 days per week ($n = 8$, 14.81%), weekdays ($n = 12$, 22.22%), and 7 days per week ($n = 3$, 5.56%). Further, participants reported having opened their campus food pantry with no continually operating hours. In contrast, others reported their hours of operation are once a week ($n = 4$, 7.41%), once every other week ($n = 3$, 5.56%), or once a month ($n = 3$, 5.56%). One other participant indicated that the hours of operation are based on the number of federal work-study hours available for student workers. As reported earlier, about 11% of pantry employees are student workers who are mostly funded by the Federal Work-Study Program.

The food pantries were reported to be located throughout their campus with a large number in Student Services/campus centers ($n = 18$, 33.33%) as well as Student/University unions ($n = 12$, 22.22%). Other pantries were reported to be in campus residential housing ($n = 4$, 7.41%) and academic buildings that host academic departments, student organizations, and classrooms ($n = 10$, 18.52%). Another pantry is in a financial aid office, and one other university food pantry was reported to be in the university dining hall. These locations help offer students the opportunity to address their basic needs in an area where there are other campus facilities and activities.

Periodic campus pop-up food distributions, mobile pantries, textbook rental offices, campus police buildings, campus parking lots, and the Deans of Students' offices were other common locations and services. In addition to food pantries, some participants ($n = 2$) also reported offering additional student services, such as professional closets, where students could borrow professional apparel for job interviews.

Food Insecurity Discussions on Campuses

Overwhelmingly, 96.2% of participants indicated that food insecurity is a topic of discussion among faculty and staff at their campus, further portraying the growing need for student services across college and university grounds. Five participants further reported that their institutions are in expensive areas. Other participants reported that most of their students are coming to school from a low-income background ($n = 7$). Eight participants reported that housing and student retention have contributed to food insecurity issues on their campuses.

As many participants reported, “Media coverage; Concern for students’ wellbeing; Understanding that a student has to meet basic needs before succeeding academically;” and “It’s hard to see how this isn’t impacting students nationwide, and we aren’t exempt from that.”

Another participant mentioned how inevitably, the discussions are often presented in campus environments, “It's often in our student newspaper, and local news. It's presented at often.” Other responses about the ongoing discussions at colleges and universities included:

We have a growing number of international graduate students and we live in a very expensive urban area. We regularly have students who do charity work and give to the homeless and less fortunate and have programs dedicated to making sure the children of our local area have access to on campus programs - we always have some type of conversation on campus and now it is turning to the students, who we realize are in college but may not have access to nutritional food, may need to make choices between food for themselves or food for their children, or may be homeless.

(Participant, 18)

In part to a couple faculty members and interns on campus, we sent out a survey to all students to identify their needs while at the university. There was such an alarming rate of food insecurity that our shareholders even identified it as something that needed action taken upon. It has continued to become a discussion in daily lives as stigma decreases across campus. (Participant, 45)

Food insecurity is a hot topic because of basic needs infrastructure and efforts currently in place/on-going. Professors want to know how to support their students and likewise career staff want to know how to best create and develop student services that holistically support students throughout their academic journey. (Participant, 15)

A student survey came out in 2017 that stated that 40% of students on our campus are experiencing some form of food insecurity. Last year, a group of students started a

Basic Needs Campaign and went on a hunger strike that forced the issue of food insecurity to the forefront of people's minds. (Participant, 20)

Participants also described the financial struggles of students, such as:

Faculty and staff are concerned about student wellbeing because of empathy but also because food insecurity is a retention issue. We also operate out of the Department of Public Health and Human Performance, which allows us to marry the nutritional content in our classes with the service-learning available at the food pantry. (Participant, 5)

Staff and faculty were concerned about student wellbeing on campus, with many articulating how they could better serve their students. Other participants expressed how faculty and staff are becoming more involved with recognizing the need for contributing to discussions about food insecurity on campus "[The food pantry] is located in the most impoverished county. Faculty and staff created a basic needs committee to look at issues. Promotion of our resources across campus generates conversations (Participant, 28). Participant 11 said "It [food insecurity] is something they are passionate about and they want to be able to get rid of this obstacle that may be keeping students from earning their degree."

Participant 30 described some of the issues observed on campus "A growing number of students are experiencing it [*food insecurity*], and as faculty and staff, as we work to help students succeed in the classroom, we're seeing greater occurrences of obstacles outside of the classroom."

As further described by other participants:

We make it a point of discussion to bring awareness and talk about food insecurity and basic needs resources for students. While the conversation could span to more faculty/staff groups around campus, the primary people involved in the discussion of food

insecurity/implementation of the food pantry program are Student Affairs folks.

(Participant, 31)

A committee was in place in Fall 2017 and they believed that food insecurity was something that students suffered from silently. Research was done and we conducted a survey among the students to showcase there is in fact a need. (Participant, 28)

Upper administration has been interested in this topic for the last few years, and faculty researchers have joined the national conversation about campus food insecurity.

Some of our current admins are former faculty who've helped students in need before, so they're especially attuned to these needs. (Participant, 47)

While we have had the pantry on campus for the past decade, I believe that faculty and staff are finally starting to realize that it is a large problem that students are facing and that it is only getting worse as the cost of housing and tuition rises while the job market stays stagnant. (Participant, 34)

Another participant shared similar feedback after reporting that their campus conducted a study on the topic:

The locations of our campuses are in areas that have higher rates of food insecurity compared to the state and national rates. 50.2% of our students suffered from low to very low food security. 192 students reported being displaced. The pantry is operated in a safe, confidential zone, without judgment, reducing the stigma of poverty. Since 2015, [we] have hosted more than 275 campus-based Pop Up Pantries distributing thousands of pounds of organic produce and rescued food to students at locations throughout campus (e.g., recreation center and library). (Participant, 50)

Communication issues, cultural barriers, and student services are essential to understanding the specific needs students desire from campus and the opportunities and activities they perceive as relevant to campus and student services. As one participant shared, cultural misunderstandings and individual interpretations can negatively affect campus food pantries in the following ways:

We are new, but a common problem among food pantries that we've seen is the cultural differences of international students not understanding what a food pantry is for and taking free food because it's free rather than because they really need it. The explanation of "what is a food pantry?" sometimes doesn't get picked up because of language barriers. We're changing that this year with a session at international orientation about why the pantry exists, who uses a food pantry in the United States, and the cultural context behind it. The goal is to make sure that graduate international students are eating nutritious food, because we also know that they can be making less money than others, have a hard time finding even low paying on campus jobs/internships, and live together off campus for cheaper rent. We have also had stories of international graduate students being on campus and not getting paid and not telling their supervisors because they did not want to be sent away, so they were starving. There are students in a lot of need here, so the communication across cultures aspect is something we're looking into trying to find the best way to communicate first to get the point across. (Participant, 17)

Food Pantry Use

Food insecurity issues are only part of a more significant lack of basic needs affecting students on campus. When asked if the campus food pantry only offers food items, 88.3% of the participants reported that other items are also available in their pantries, including toiletries, personal care and hygiene products, school supplies, cooking and kitchenware, and cleaning

products ($n = 48$). As reported by 90% of the participants, campus food pantries are not temporary solutions or projects, which implies that food insecurity issues in academic environments are an increasingly complex issue.

The number of students visiting their campus food pantries has increased overall. According to 82% of participants, over 100 students use the food pantry in an academic year. This number excludes the number of individuals who use the pantry, including faculty and staff, and others who are permitted to use the pantry's services. According to 85% of participants, the number of student patrons has increased much higher than in previous years. The need for food on campus becomes more critical as food pantry administrators begin developing other efforts to sustain the pantries' operations and services. As expressed by a participant:

Due to the high number of clients in need of food, we are often running out within the first 30 min-1 hr. Because of this high demand of food, a higher volume of food pantries is needed to fully provide food access to all students in need. (Participant, 41)

Interestingly, the study's survey had been distributed to all participants in the fall semester. The effects of food insecurity on campus were recognized across the represented pantries in the sample. About 15% of participants reported that their food pantries have limited operating hours of service. If a student can only visit the pantry at certain times in the day, they will likely not meet their effort in accessing food if their campuses' food pantry has limited hours of operation.

In a series of open-ended responses, nine participants reported that their pantry would either assign Case Managers to students who frequently visit the pantry; or assists them with filling out a SNAP or basic needs application. Other participants ($n = 5$) reported having a policy in place for arranging an appointment with a Case Manager.

According to 62% of participants, students are limited to the items they can take per visit. Thirteen participants reported that items per visit are limited to once a week per patron. Further, five participants reported that a student could visit the pantry twice a month, or twice a week ($n = 2$), with up to 60 visits per student. Also, 56% of the participants reported having a cap on the number of visits per student. Students could take two full grocery bags per visit ($n = 2$), 10 pounds of food per week, or 9-12 items with only one item in each food category.

Participants did not report any specific policies affecting how they determine the hours of operation or the number of items per capita overall. However, one participant said that their campus does not enforce any policies, because several of their students live in households with children and dependents. While some pantries ($n = 4$) use a point system to track items per patron, others do not enforce a limit on the number of items a patron can take on any visit. Individual self-reported responses varied to the question in the study's survey about the cap on the number of items per visit. Therefore, the researcher could not use those responses for purposes of statistical significance.

When asked if patrons are primarily students who have used their meal points, 82% reported that is not the case. When asked if there is consistency in the pantry among the number of food items, participants reported:

Occasionally, 10%

Fairly many times, 15%,

Very often, 15%, or

Always, 10%

Participants further reported meeting food regulations and environmental safety concerns in operating their food pantries. For example, some of the participants ($n = 9$) reported strictly

adhering to accepting donations of unopened goods; and six participants reported that the pantry's temperature must meet specific guidelines for quality and safety. In terms of food quality, a few participants ($n = 4$) indicated that donated foods must be unopened or unwrapped, unexpired, and cannot be homemade. Other participants ($n = 7$) reported to routinely checking expiration dates on items like bread and cheese. Other participants reported that they would either toss out or reject expired food donations, and expired foods in stock ($n = 9$). Two participants reported that their pantry only offers canned goods, while four other pantries specified that they only accept non-perishable donations.

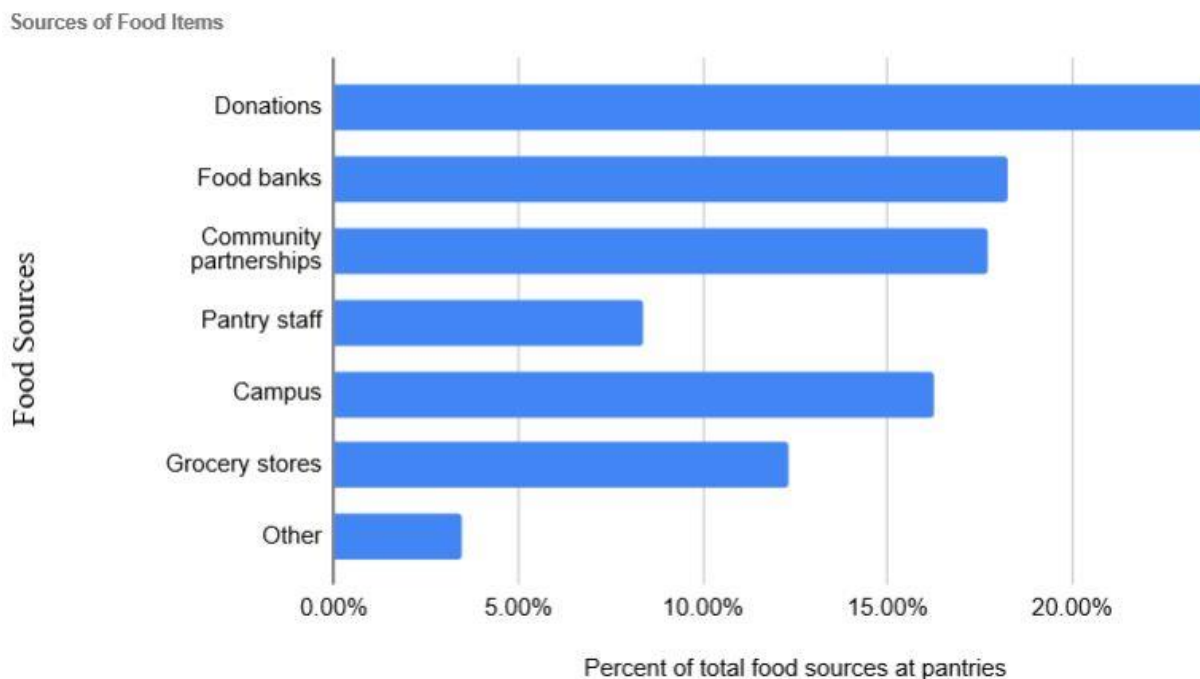
About 40% of participants indicated they were operating as an agency of their local food bank or partnering with their local food bank(s). As such, participants and their staff generally follow local food bank guidelines or the Feeding America organization, a nonprofit working on hunger and poverty issues serving food banks in the United States (Waite, 2019). Further, only 5% of the participants reported having food pantries that functioned under state or local regulations and guidelines. Campus' risk management offices were reported to help oversee 25% of the food pantries in the sample, assisting in meeting campus protocol. About 13% of the food pantries in the sample follow the USDA guidelines to operate their services on campus.

In specific, donations provided to the pantries included items purchased by pantry staff members, and foods brought in through community partnerships. According to 84% of participants, the food offered at the pantry varies by the donations received. Other participants reported that their donations are consistent with the availability of food items from their partnering food bank ($n = 6$). According to 79% of participants, there are over 100 available food items in their pantry; and 10% replied that they have between 76-100 available food items. In

self-reported responses, some food participants ($n = 4$) reported that their pantries include low sodium, sugar-free, and dairy-free food products to meet nutritional recommendations.

Figure 1

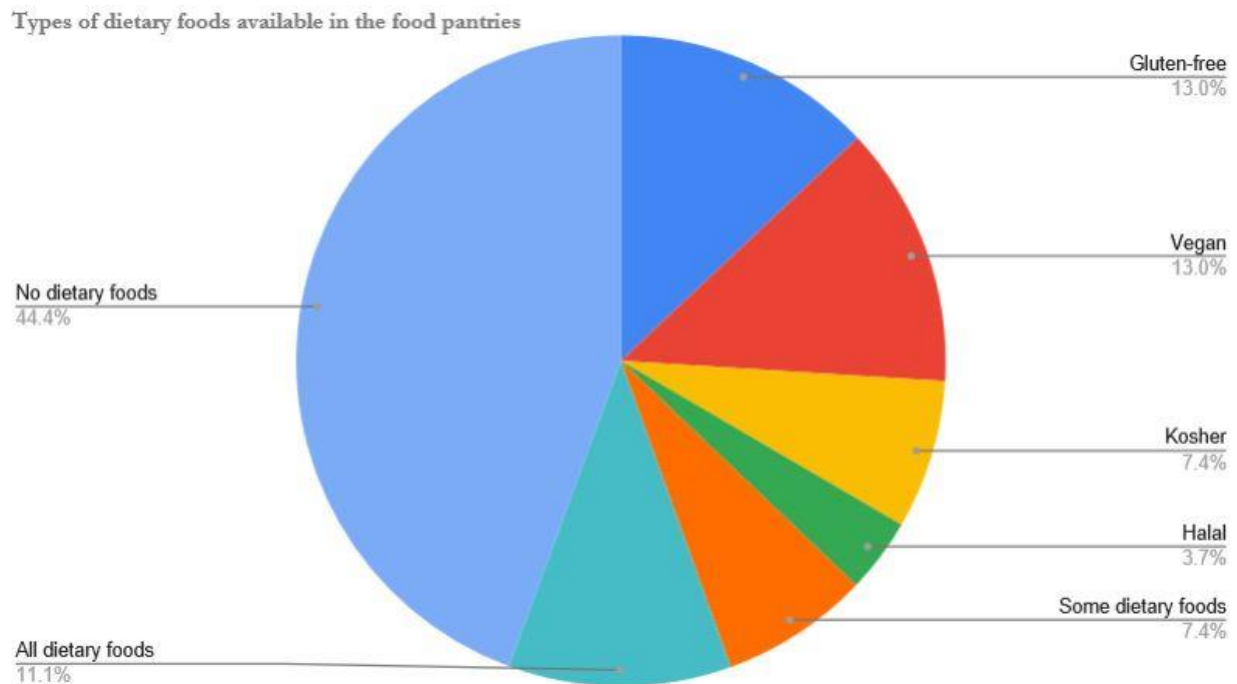
Sources of Food Items at Campus Food Pantries in the Sample



Additionally, three participants reported that their pantry offers unlimited fresh produce. About 63.5% of participants indicated no specific policies that would affect how students experiencing food insecurity could better address their needs. However, a few participants ($n = 5$) reported to providing students with alternatives to helping solve food insecurity issues as a whole, such as establishing a community garden on campus, fundraising for food security and basic needs causes, and promoting food safety and wellness across campus student organizations and administrative departments.

Figure 2

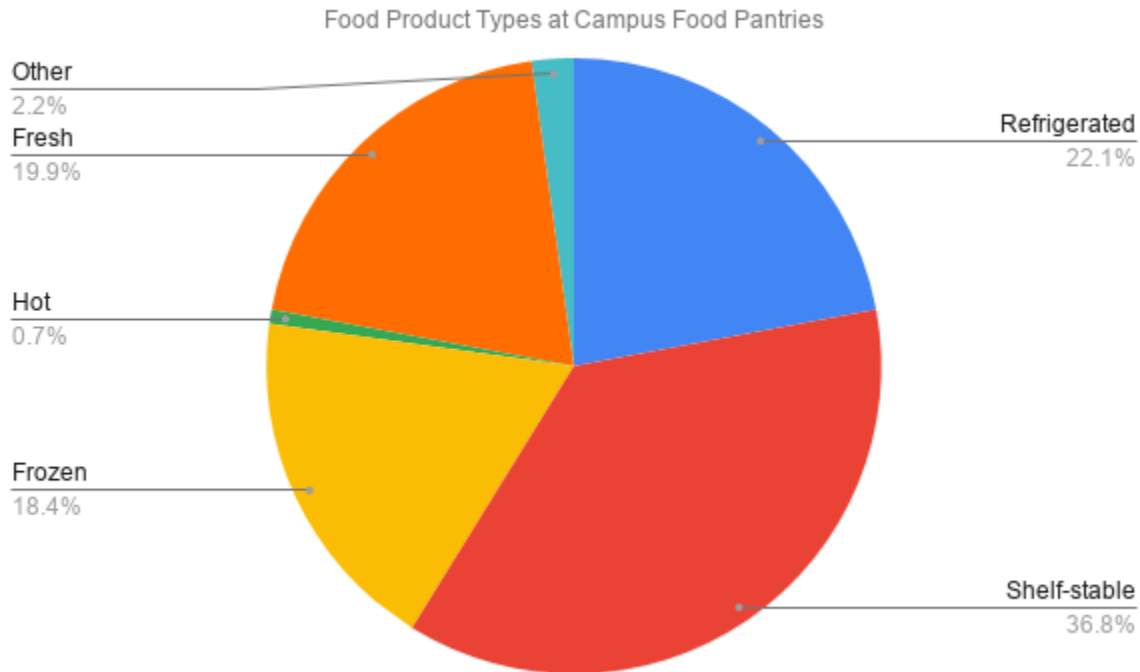
Dietary Foods Available Across Campus Food Pantries in the Sample



Of the total available food items, fewer participants (5 of 54 [11.1%]) reported offering all types of dietary food, including Kosher, Halal, vegan, and gluten-free items. However, 43% of participants said that their food pantry includes certified gluten-free, Halal, Kosher, vegan, or other dietary foods. On average, students were reported to have received different amounts of food in an academic year comprised of shelf-stable goods, refrigerated items, frozen foods, and fresh foods. The exact type of food items available at the campus food pantries is unknown by the researcher, however, as further illustrated by a participant, “We are not equipped to give out fresh produce, refrigerated items, or bread, so we turn these donations away as per our own food safety policy.”

Figure 3

Food Product Types of Campus Food Pantries in the Sample



Overall, fresh produce represented 19 percent of the food distributed across food pantries. The macronutrients in food items are either moderate (40.8%) or between high to very high in nutritional content (59.2%). The micronutrients in food items are also reported to have been either:

Moderate, 55.1%

High, 22.5%, *or*

Very high, 8.16%

To illustrate how micro and macronutrients impact the food pantry, one participant shared:

We focus less on nutrition (i.e. macro and micronutrients) and more on providing a wide variety of food to students. We also avoid using terms like "health" when discussing food

as it can be a trigger to some students, and we want to avoid enforcing dieting cultures and trends when our main purpose is to provide food to those who cannot access it.

(Participant, 46)

Case Study Analysis

The local landscape of the food environment can be an independent indicator of food insecurity in the community; however, it might not be generalizable to the whole population. The researcher believed that embedding the case study analysis with the quantitative aspects of the study provides a better understanding of the barriers to food access and categorically different food options. The physical environment and the various food donations and food pantry partnerships on-campus that pantry leaders would encounter with their current food environment would also be discussed on a broader community level.

The researcher used a select case study analysis to embed a more applied understanding of the research questions. No prior case studies had been conducted in previous studies exploring campus food pantries in food desert census tracts. There have also not been any case studies examining specific combined neighborhood demographics, spatial complexity, and food accessibility from a higher education perspective. These factors are important in determining some of the likely neighborhood characteristics affecting food insecure populations on college and university campuses.

The researcher selected three counties in Georgia, New Mexico, and Texas, which were reported in the study's survey. The counties were identified from the responses in the questions that included the campus food pantry locations. The counties include Chatham, Doña Ana, and Nueces, respectively. Collectively, there are twelve campus food pantries represented in this sample.

Table 1*Demographic and Economic Characteristics of the Population Living in Food Deserts*

Indicator	Chatham County (Georgia)	Doña Ana County (New Mexico)	Nueces County (Texas)	United States
Food deserts				
Percent of population living in food deserts	18.6%	27.9%	12.9%	17.7%
Demographics				
Population	289,195	217,522	362,265	327, 167,434
Percent White, non-Hispanic	48.2%	26.9%	29%	60.4%
Percent African-American/Black	41%	2.4%	4.3%	13.4%
Percent Hispanic	6.6%	68.6%	64.2%	18.3%
Percent Asian	2.9%	1.3%		5.9%
Percent American Indian/Alaska Native	0.4%	0.2%	0.9%	1.3%
Percent of college graduates	33.2%	27.5%	21.5%	31.5%
Income and Poverty				
Median household income	\$54,911	\$39,164	\$55,048	\$63, 179
Poverty rate	14.4%	24.9%	16.2%	11.8%
Percentage change in per capita income from 2009-2019	+17.2%	+17.4%	+38.4%	+4.9%
Percent receiving SNAP benefits	2%	5.8%	0.09%	12.4%
Percent change in per capita SNAP benefits (2009-2019)	--	--	--	+3.6%

Note. Data are from "U.S. Census Bureau QuickFacts," by the U.S. Census Bureau, 2019

(<https://www.census.gov/quickfacts/fact/table/US>). In the public domain.

SNAP data are from “Food Access Research Atlas,” by the U.S. Department of Agriculture, 2019 (<https://www.ers.usda.gov/data-products/food-access-research-atlas.aspx>). In the public domain.

Further, the three counties were found to have been in areas consisting of food deserts. In general, food deserts are often found in abandoned communities or vacant homes; and have smaller populations. Residents tend to have lower levels of education, earn lower incomes, and have higher unemployment rates. Food desert tracts are comprised of different ethnic and racial compositions across the U.S. (Raja et al., 2008). Based on the research, it is suggested that individuals living in food desert areas have low access to healthful foods and are more likely to experience food and nutrition insecurity. The percent of the population living in food deserts in Nueces County was the lowest compared to the national average, and the percent of the population receiving SNAP benefits was also lower than the national average.

The median poverty rate was much higher in all three counties than the poverty rate of the U.S. Such findings are also important to understanding educational settings and the neighborhood food environment. These findings further help understand the factors that affect students who intend to enroll in local colleges and universities after completing their precollegiate education. Demographic factors related to housing status, early childhood education, academic achievement, and various socioeconomic status levels are also critical to understanding food insecurity across college campuses.

Within the three counties' neighborhood context, there is one community college, and one public research university with several campuses and branch sites, comprising a total of 26,975 students in Doña Ana County. The county also includes three K-12 school districts. In Chatham County, there is one public research university and four private institutions. Chatham County

only has one K-12 school district. The total estimate of students enrolled in the county is approximately 25,000. The percent of college graduates with a bachelor's degree is also higher in Chatham County than the national average.

In Nueces County, there is one large public research university and one technical community college with about 23,000 enrolled students. There are also thirteen K-12 school districts in the county. Chatham and Doña Ana counties had higher populations living in food deserts than in the United States. Each county is reported to have only one food bank in the area serving the entire population. Ethnic markets, organic and whole, and natural foods stores were limited in each county. There were more grocery stores than any other type of food retailer in the counties. No direct relationship could be discerned from each county's nutrition insecurity among food deserts.

Spatial Accessibility

The researcher used the Manhattan block distance to determine the spatial accessibility in the three selected counties. The Manhattan distance had also been used in a variety of other studies (Smoyer-Tomic et al., 2006; Thornton et al., 2012; Veenstra et al., 2010; Zenk et al., 2005) to determine supermarkets' and other food markets' spatial accessibility in metropolitan districts. The model measures the distance between one area in a block or corner where an outlet, such as a food retailer, is spatially reachable and currently available. The spatial access in this study consists of a student moving from one campus location to a food retailer either by car or walking distance to an area with available food products. Therefore, a student can reach specific food destinations from a neighboring block that is available when they need to make a food purchase. The Manhattan distance also helps inform researchers about the areas in which spatial inequality affects a student's food access within campus distances.

Using the following equation,

$$d_{ij}=|x_i-x_j|+|y_i-y_j|$$

where d_{ij} is the distance between origin i and destination j ; and x and y are the latitude and longitude coordinates of origin i and destination j , the researcher analyzed the grocery store density of the three counties. Food store accessibility represents the distance to the nearest supermarket, convenience store, or grocer, for a resident living in the center of the county or neighborhood.

The nearest supermarket/grocery store's median distance is 5.2 miles in Chatham County, 2.4 miles in Doña Ana County, and 3.6 miles in Nueces County. According to the USDA Food Environment Atlas, there are about five traditional full-service and fast-food restaurants available per one thousand people in Doña Ana County. There are four traditional full-service restaurants per one thousand people in Chatham and Nueces Counties. There are more food stores in Chatham County than in Doña Ana and Nueces counties, reflecting the lower population density.

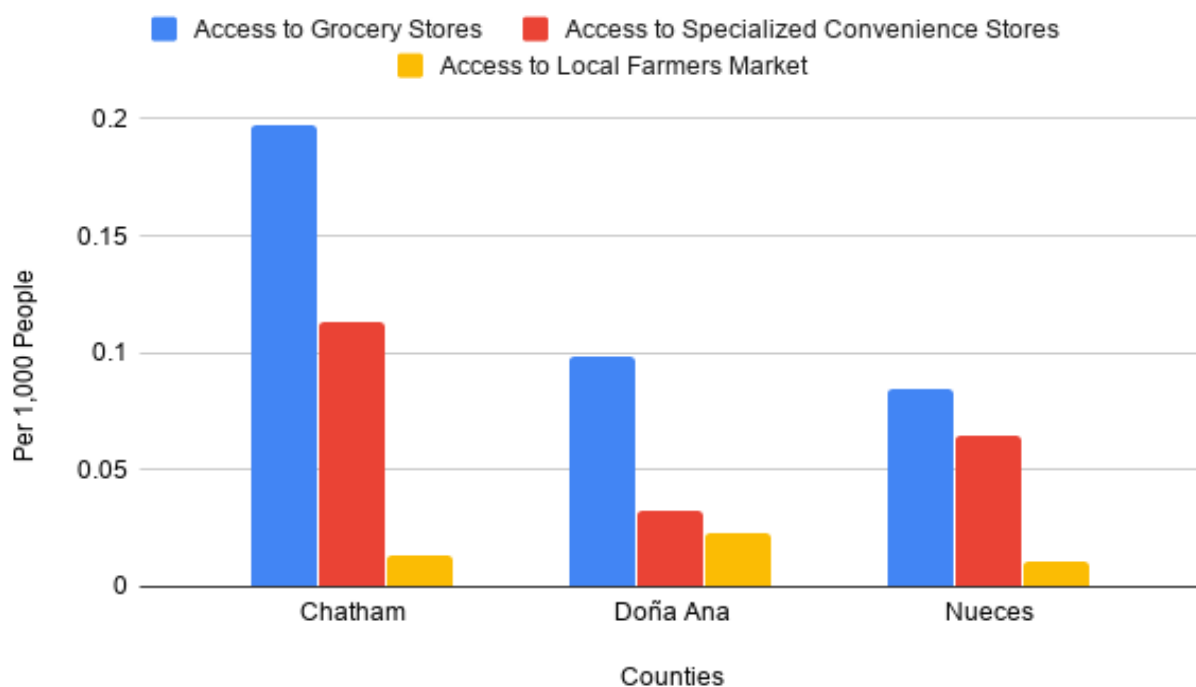
Areas, where multiple colleges and universities serve large student populations, can strengthen connections between local institutions and create new opportunities past the challenges of acquiring food and emerging food insecurity. By identifying how campuses are identified and represented at the community level, technological advancements can further help public institutions attract more attention toward the cycle of food manufacturing, food products, food retailing, and food insecurity.

As shown in Figure 4, the researcher gathered the approximate number of food stores in the three selected counties. There is moderate access to specialized convenience stores, but higher access to convenience stores overall. Convenience stores are more frequently in food deserts and low-income urban areas than the rest of the U.S. While a similar trend was not found

when factoring specialized food stores, there were more convenience stores than ethnic food markets and grocery stores combined. There were no significant relationships among grocery stores, specialized food stores, and small and large grocery stores.

Figure 4

Access to Grocery Stores, Specialized Convenience Stores, and Farmers Markets (per 1,000 people)

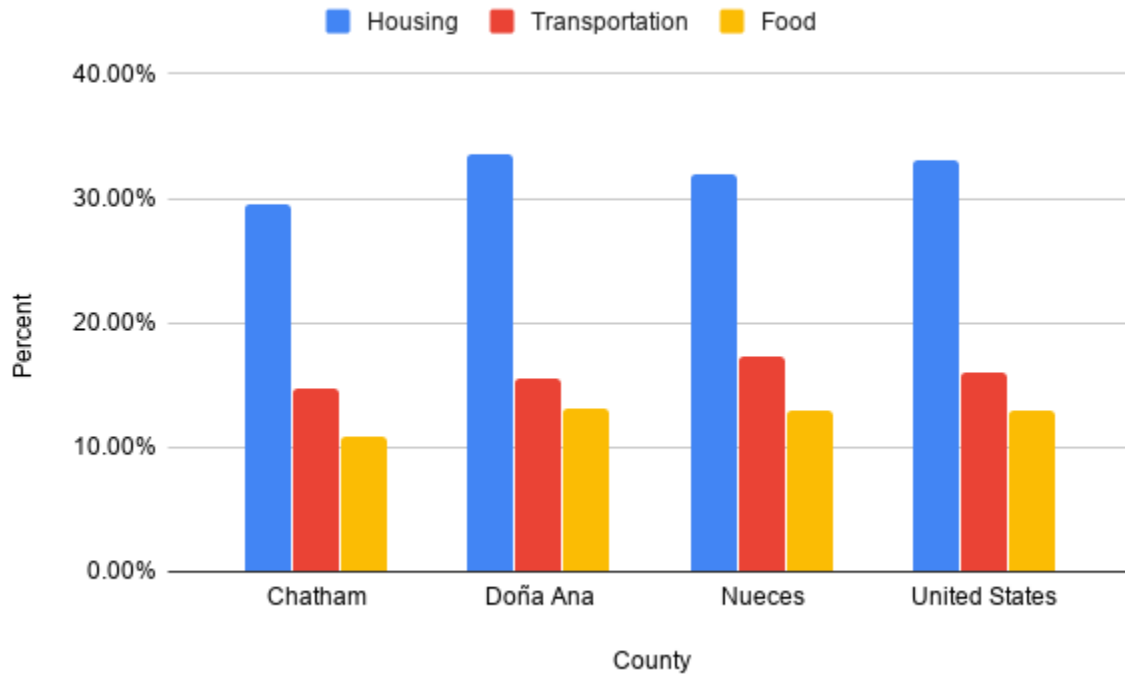


Note. Data are from "U.S. Bureau of Labor Statistics," by the U.S. Department of Labor, 2019 (<https://www.bls.gov/data/>). In the public domain.

As shown in Figure 5, housing was the largest expenditure category for all counties, averaging 32.8%, which is slightly lower than the national average. Transportation expenditures were 15.83%, close to the national average of 16%. Food was the lowest expenditure overall, with the lowest in Chatham County, 10.9%. Further, the average U.S. household spent 12.9% of its expenditures on food necessities.

Figure 5

Percent Distribution of Average Annual Expenditures for Food, Housing, and Transportation



Note. Data are from "U.S. Bureau of Labor Statistics," by the U.S. Department of Labor, 2019 (<https://www.bls.gov/data/>). In the public domain.

Chapter 5: Conclusions, Implications, and Recommendations

This study contributes to research on local food environments and its related impact on higher education in several ways. First, this study provides suggestions for current and future administrative leaders in higher education to consider opportunities for advancing student success. Second, higher-education students can also benefit from the study's findings as they continue to meet their academic and professional goals. Third, this study and its implications help identify the types of food retailers available among student populations; and help inform environmental policies and food marketing strategies. The study also provides findings of different food access barriers across communities in the U.S., as well as the quality of foods and food stores in specific census tracts with populations experiencing remarkably high rates of food insecurity.

The researcher further focused on available food product types offered at campus food pantries and studied some of the cultural and social challenges to accessing local foods. Educational leaders across institutes of higher education could recognize the structures and shifts in their neighborhood food environment and begin to further develop an understanding of students' cultural and dietary preferences overtime. Also, students whose food and dietary preferences alter within the school year might find campus food pantry services useful for some of their immediate and long-term needs. This study sought to answer the following research questions:

1. What are the most significant factors contributing to the growth of campus food pantries?
2. To what extent have food pantries on college campuses helped to alleviate food insecurity among students?

and

3. What are the ways in which college food pantries have improved the dietary needs of student populations?

Factors Contributing to the Growth of Campus Food Pantries

As it relates to research question 1, factors affecting the growth of campus food pantries are different across campuses and neighborhoods. This study's results agree with the literature that food insecurity is as concerning on college and university campuses as housing insecurity. One interesting difference is that the number of student patrons across pantries had increased overall, with significant increases in total unique or first-time visitors. However, these figures do not include faculty and staff who had used their campus food pantry for a variety of services.

The Design of Campuses

The factors that differentiate the neighborhood food environment from the overall campus food environment have included the importance of cities and neighborhoods' design. A previous study (Keith et al., 2015) referred to the absence of sidewalks as a barrier to food environments' physical environment. There are also some challenges associated with reaching a food destination from physical space overall in the campus and neighborhood. As with the neighborhoods described in the case study analysis, many students would have to walk a longer distance or use a different mode of transportation to arrive at a grocer or food retailer that met their specific food needs beyond campus. The same would apply for the campuses located in communities that typically lack safe and accessible crosswalks and traffic lights.

Food destination accessibility from a student's location is essential to consider as students begin to change their academic coursework, their work schedules, and their housing from term to term and year to year while fulfilling their degree/course requirements. In contrast to the

literature, the study participants reported that the students who visited the campus food pantries were not found to have encountered issues specifically with accessing or locating the pantry because of physical space on campus. As it relates to food insecurity and spatial complexity, with limited food pantry operating hours, students must learn to adjust their schedules or find other ways to meet their food security needs. Students who previously had access to their food pantry services may not be able to visit the pantry as they might have had in the past. Such changes can also affect the hours of operation a campus designates for their food pantry or when deciding to open more food pantries across campus to reach more students.

More than half of the research participants in this study said that their food pantry is in a location with the highest number of student gatherings, such as the student center, or in areas where many students visit or take classes throughout the day. However, campus food pantry locations also often change within an academic year. This is in part because, in some areas on campuses, there are challenges with distributing food, as described in the literature. Also, grant-funded food pantries are not always sustainable for the time after the project has been completed, even if the need for such food services is still in place. Across findings, students who needed to use the campus food pantry had frequently not known the pantry's location; and others understood neither the food pantry's primary purpose nor their terms of service.

Lack of Grocers and Food Retailers in the Neighborhood

The lack of grocery stores, coupled with a lack of specialized food stores, each contributed to the problems of food insecurity differently. Access to food by distance did not heavily influence the likelihood or willingness of students visiting their campus food pantry. However, a local grocery store or food pantry located close to a student's residence or dorm might not be of great utility. Students might enroll in a university that is in a neighborhood with

a more extensive selection of restaurants or food retailers to supplement their food and dietary needs. Further, recurring disparities in food environments contribute to the lack of healthful, nutritious, and specialized foods in certain neighborhoods. Economically, if convenience stores were to offer more food items, including specialized and healthy food, they would likely charge more for them, which would not necessarily be affordable. Further, high start-up costs and the availability of attractive land for developers to build grocery stores with more food product offerings near college campuses are also considerations for professionals, such as realtors. In that same respect, future developers could evaluate implications of the values that a public institution of higher education serves, bridging public-private sector partnerships.

Lack of Transportation

The lack of transportation also affects students from traveling outside their campus. The campus food pantries help solve transportation barriers for students who reside on campus, but only in limited capacities. Fully online students, commuter students, and students with limited or no vehicle or transportation access can also encounter different restrictions in visiting their campus food pantry. Extended food pantry hours might meet the demand for students to acquire food items. However, students who continue to use their campus food pantry could consider how another service on campus would better meet their basic needs. These findings are consistent with those found in Mirabitur et al. (2016) and Water-Bailey et al. (2019).

Episodic Cash Flow

Episodic cash flow is another factor contributing to the growth of campus food pantries. It is one of the more significant problems affecting students, rather than the direct effects of extreme forms of poverty and hunger. Students who do not have a consistent income source encounter difficulty securing their food needs and academic expenses. Because of the

uncertainties of having stable cash flow, food expenses are part of a more complex conversation surrounding tuition and student services, and the cost of attending school.

The cost of maintaining campus food pantries is also an essential factor in maintaining services that are ready to meet the needs of students. Based on these additional findings, campus food pantries will likely increase throughout colleges and universities to supplement basic needs that are not available in many neighborhoods overall.

Campus Food Pantries and Students' Food Insecurity

As it relates to research question 2, since some of the campus food pantries were partners of their local food banks, it is reasonable to suggest that the pantries are not designed with the same structures exclusive to students and their food and dietary needs. The campus food pantry might encounter several challenges in consistently meeting the demand of providing every food product type that might be needed or requested on campus. In this study, some pantries had been identified or described as an up and coming project created to meet immediate and recurring basic student needs. In contrast, others were launched to promote student wellbeing and health. Generally, the rules, regulations, laws, and guidelines used to operate a campus food pantry affect the types of foods a pantry can offer to patrons.

As it pertains to the extent to which campus food pantries have helped to alleviate food insecurity, first, it is challenging to determine how student populations would benefit from a variety of food stores and food products on campus as well as within their neighborhoods. A lack of multiethnic food products in the food pantries, while not necessarily found to help improve the food environment overall, does not imply that the essential quality of foods in low-income, high-poverty neighborhoods are scarce. Multiethnic representation in the U.S. varies significantly from region to region.

Second, the results of this study suggested that campus food pantries consist of limited food options overall. Students could potentially visit their campus food pantry that is either entirely or partially devoid of dietary foods, making it more challenging to decide whether to visit the campus food pantry. As further presented in the findings, it is still a challenge to obtain foods that students request, because of the number of donations and the type of foods donated to the pantries. However, campus food pantries can differentiate their services from the local or community food bank to make it more connected to student and campus needs.

The availability of specific nutritional or dietary food items in a community does not infer an increased or decreased consumption of healthful food items overall. As it pertains to findings within the literature (Pingali, 2010), there are further implications for considering the population's health disparities. One cannot assert that students would choose to consume healthful, nutrient-rich foods if provided with adequate access from their campus food pantry and around their neighborhood environments. However, there are also several unintended consequences, such as increased food insecurity with the consumption of prepackaged, innutritious food, and chronic hunger. Rich-calorie, low-nutrient diets are linked to food and nutrient insecurity, and micronutrient deficiencies compromise physical and cognitive development. Based on these findings, however, it is likely that food insecurity will continue to grow on college campuses unless the quality and affordability of food stores are better than the options currently available to students.

Third, 31 campus food pantries in the sample require students to show a form of student identification to use the pantry. If students misplace their student identification or forget to bring a form of identification, it might delay the process and prevent them from using the pantry. Basic instructions might not always be followed, and individual eligibility requirements might not be

understood. Additionally, students might not use the service if they feel that they are being tracked for every visit. Students might wish to use their campus food pantry services confidentially. The process of tracking students who frequently use the pantry and the recommendation of having students apply for benefits, such as SNAP, can further increase the stigma surrounding food insecurity.

Fourth, by submitting a basic application form, students might feel that their needs are not addressed adequately. Then, having to wait to have an application approved is another challenge that would prompt a student to reconsider a trip to the pantry or scheduling an appointment with a Case Manager. A student might further feel shame in discussing their concerns with a Case Manager. As shown in the study's findings, many interns and student workers also manage the campus food pantries' operations. The student patrons might not be willing to meet with someone among their peer group who would be responsible for assisting them with completing a basic needs or SNAP application.

Campus Food Pantries and Students' Dietary Needs

As it relates to research question 3, the participants acknowledged that some food items might not be preferable for all patrons. However, offering foods either of a lower nutritional value or no dietary or cultural contents was not perceived as a direct barrier to overall food access. Instead, the types of food items currently available inside the pantries are necessary for maintaining operations; and follow specific guidelines and regulations. Food allergies, nutritional preferences, and medical conditions influencing campus food pantries are consistent with other findings (Paola & DeBate, 2018).

Approaching Basic Dietary Needs

Food donations can often limit the types of food items that might be requested or preferred by staff members and patrons. The limitations of some internal policies on operating a campus food pantry might also affect the types of foods that a pantry can offer in an academic year. The staff might like to provide a variety of select food options and basic needs items in their food pantry; however, the unpredictability of donations poses additional barriers to food assistance.

Additionally, suppose a local food bank serves as the only provider to supply food items that are not an option for consumption to a group of students. In that case, those same individuals might feel cultural or social isolation. In turn, students might consume smaller portions of food that are not a part of their regular dietary intake or use food items that are not available. Supposing that the requirements for maintaining a balanced and healthy nutritional eating are excluded from a student's nutritional intake, students might not have the opportunity to seek food from other food retailers or campus services.

Further, the more that campus food pantries rely on the partnership and donations offered by their community food banks, the more likely it is for some issues surrounding food insecurity to persist. Many essential foods necessary for large groups of students will also be more challenging to acquire as the supply of adequate, nutritious, multiethnic, and healthy foods become less accessible around college and university campuses and in the neighborhood.

Improving Dietary Needs

While participants had also expressed a desire to include more foods of nutritional value in their food pantry, the overall impact of the food pantry does not help reinforce detailed discussions necessary for preparing meals per dietary rules. Another limitation is whether

different forms of stigma related to food preferences prevent campus food pantries from providing food items that are not preferable, but necessary to the community or students' needs, and vice versa. If students feel excluded from the services and food items that their campus pantry offers, the number of student patrons could decline. A decline in pantry services would not imply less food insecurity around campus. Instead, the reduction would challenge the food pantry's overall effectiveness.

Further, a campus could not track every type of dietary preference, custom, or desired food rule. Some students might not follow religious or dietary traditions, irrespective of a faith-based, athletic, performance, or physical training background that requires adherence to food and dietary rules. Still, it is beneficial to understand how all members of the student body access and consume food and determine how foods are acquired, prepared, stored, and handled. One cannot find what they are looking for in terms of food, without compromising the other, especially regarding dietary customs and food preparation. The spatial complexity of the campus food environment can, in many ways, inform how the community food environment contributes to better and preferable consumer interests over time.

Additionally, dietary preferences and food laws might be more conducive to secular food rules and laws when operating a campus food pantry that serves a diverse student body. However, it is one additional consideration to infer what happens when religious/secular relationships begin to cause shifts in public institutions. The mix between secular and religious providers varies among communities (Minow, 2003). Food providers also vary across states and municipalities concerning the global food system. The food system changes in response to consumer demands and is affected by individuals who follow specific food customs over time.

If campus food pantries were to introduce more food products derived from dietary laws

or cultural and customary contents, then economic, political, and social changes would most likely occur. In turn, student preferences, behaviors, and practices would also be affected. Food distributors and foodservice providers would also experience changes in their business models and practices. Additionally, their contracts with institutions would become affected. As such, public institutions of higher education that prefer to keep foods of a religious or cultural purpose separate from their campus food pantry, in general, could find other viable solutions to providing relevant and inclusive food products and distributions for the populations they serve.

Food Systems and Policy Implications

The food supply chain in the modern U.S. food system is overly complex and involves multiple actors and processes. The food system has direct effects on individual health and food consumption. Food consumption, as determined by food quality, quantity, and safety, indirectly affects the food system. A sustainable food system provides accessible, acceptable, adequate, and available (Shannon et al., 2015). Some of the changes shaped by the local food context include environmental shifts, which can, in turn, create indirect and unintended consequences on the overall food system.

Food prices and food insecurity usually rely on several assumptions about the relationship between costs and consumption and consumption and food security. Food production and productivity respond to technology and the availability of land for irrigation. Consumer income and food preferences influence the demand for specific foods. According to the National Research Council (2015), as incomes rise, consumers demand more animal protein sources, which generally require higher production prices. External forces such as weather, transportation, agricultural policies, food processing, food marketing, food packaging, and restrictions of various retail sectors have also impacted consumer food prices in the food supply

chain (Nesheim et al., 2015). However, food consumption patterns are not more likely to differ or change among populations as significantly.

Small changes in food prices can also affect food consumption patterns (Alston et al., 2008). Focusing individually on specific consumer behaviors and consumption patterns to the changes in food prices can be problematic, as suggested by (Farnese, 2010). Food production and consumption vary across regions and populations. Differences in price, food preferences, and income are all part of how consumers change their food consumption and make decisions about their purchases. The per capita consumption of the same or different foods also varies among populations across the U.S. Consumers continually make different dietary choices, whether conscious, about food consumption within a broader context of available, affordable, and acceptable foods (Nesheim et al., 2015; Tom et al., 2016).

Additionally, the U.S. food system's core aspects, as it relates specifically to fruits and vegetables, include several environmental outcomes and external processes that affect the agencies involved in the supply chain. To follow the USDA dietary and nutritional recommendations, one would have to significantly increase their overall fruit and vegetable consumption (Krebs-Smith & Kantor, 2001). The individual quantity of such consumption would affect the entire food supply chain and potentially cause threats to the food system. Further, prolonged dietary intake consistent with similar nutritional recommendations would ultimately affect the relationship between the environment and dietary patterns (Tom et al., 2016).

Understanding some of the systemic, legal, physical, and attitudinal barriers or restrictions that student populations face in making food choices is an essential aspect of learning about food-related and dietary consumption beyond spaces in higher education. It is also vital to consider the best needs for students and patrons, such as how students with specific dietary needs

continue to alter or improve some aspects of their regular diets without risking the quality of the foods they are used to consuming. Building a food pantry that continues to reflect student needs is essential for various reasons, including improving student services, responding to student concerns, and creating a place for students to share the benefits of community wellness. Students can also learn more about the global food system and its impact on individual and local communities.

Educational leaders could also benefit from using systems thinking (Senge & Sterman, 1992) in their services related to food and food products. The importance of higher education institutions as part of the global food system and the diverse student populations in the U.S. is influential in understanding student enrollment trends, campus activities, and the types of academic support services in an institution. Systems thinking applications could further aid in developing more equitable and inclusive food systems.

Recommendations

The aspirations for attending a school that meets a student's needs can impact how students perform in the classroom and at home. Educational leaders who oversee their campus food pantries would likely benefit from being informed about food items that are best suited for their students. They can also consider ways to identify different types of foods best to serve the needs of diverse student cultures and dietary needs. In turn, students could have the ability and the resources to store and consume food more safely and comfortably without feeling shame or discomfort. The researcher recommends the following suggestions for improving the quality of food pantries. The researcher also includes the benefits of building more accessible and sustainable food pantries on campus. The researcher further acknowledges advancing the appropriate linkage to student success.

First, developing a college or university task force can help different pilot programs based on identifying individual student-centered food needs and other essential needs, such as school supplies, personal hygiene products, and cooking utensils and equipment. Campuses can consider the benefits of identifying existing state and local policies that affect how campus operations function broadly at an institutional level. If a task force already serves the campus, it is essential to assess the direct impacts of their communities' greatest needs.

Students can be provided with options to choose a path that is consistent with their program learning outcomes and get involved with student groups and professional networks to expand their pool of opportunity as a student. Students could also be encouraged to work with student employment and human resources departments to boost morale, emphasize collective campus and student needs, and promote public support into the classrooms. Additionally, human resources and talent management offices can help their employees interpret shared meanings of student needs and access to different student resources across departments.

Next, the task force can seek out opportunities to gather confidential, anonymous basic needs information from students on a semester- or quarterly basis. It might be most beneficial to distribute the surveys twice a year, occurring at the beginning and end of the academic school year. Some of the results could be used to infer meanings about strategies to implement in the future. The results could also be used to identify persistent forms of food insecurity experiences, as well as ongoing basic needs.

Survey distributions could potentially occur during new student orientation programs for first-year undergraduate/graduate students, and subsequent events where other signature campus events take place. Using personalization of survey invitations might encourage students to feel welcome to provide feedback while remaining assured that their information and responses are

confidential and anonymous. Digital distribution is also an important factor to consider when understanding the benefits and advantages of students who would like to participate when managing their academic or professional schedules.

The task force can then consider opportunities for student check-ins throughout the academic term. Communicating and creating spaces where students are comfortable addressing their concerns on-campus or in virtual settings can be an essential aspect of the learning environment and help meet with students. If there are students who live off-campus, the task force can work to offer students with virtual check-in opportunities or other appointments, as necessary. Over time, it might be valuable for staff and faculty members at different departments to conduct student wellness checks on a rotational basis. Such communications can allow staff and faculty to understand some direct insight into student concerns and the overall campus environment.

Concerning hosting food distributions on campus, the task force can consider the positive influences of including more nutritious and inclusive foods as identifiable among the student population. Educating students and food pantry staff members about nutrition security and nutritive food content is necessary for advancing the understanding and utility of a sustainable campus food environment. Additionally, hosting workshops and webinars to introduce events about getting involved with the campus food pantry and encouraging volunteerism are helpful ways to get students to engage with the committee's work. Students could be encouraged to virtually participate in sessions about food preparation and management, access to nutrition, and the retail food environment. Examples of activities can include community health speaking series, academic success newsletters with tips for academic success, and wellness and basic needs webinars.

Further, course instructors can include basic needs information in their course syllabi, consistent with school policies. Action-based research projects can also attract undergraduate and graduate students involved with the school's community—bringing more cross-departmental work across policy, public health, organizational behavior, education, and psychology researchers. For example, students enrolled in legal studies programs can work with students in public health and nutrition programs to better understand the extremity of food insecurity issues and identify legislative implications at the local and federal levels.

Having the opportunity to integrate coursework with field experiences and identifying outreach and administrative efforts can increase students' participation from various institutional and academic programs. Additionally, students enrolled in fully online programs, live off-campus, or do not have reliable transportation would have more opportunities to participate in such efforts and have more ways to initiate dialog with their institution and peers.

The task force members and food pantry staff could then consider technological alternatives to helping students with meal preparation services to help access the foods they desire. Such programs can help the staff purchase food items for their pantries, which are necessary for the students they serve. The staff members could also provide periodic customized programs for students to select options that they would like to have on an individual or item-by-item basis. Applying technologies to food access problems can also help reduce food waste. In turn, students might have more flexibility to participate in professional development events and extracurricular activities; and not experience increased stress with planning their meals.

Students could further have the option to use vouchers for meals not offered at the pantry or on campus. There might also be opportunities for students to work with other students from different programs and concentrations to promote departmental activities where they collaborate

to find appropriate and timely solutions for their peers and colleagues. Further, food pantry staff members can help develop culturally relevant partnerships with the community while establishing other relations within different departments on campus to ensure that all students are valued and respected emotionally, socially, and intellectually throughout their academic studies. School functions such as orientation, community building sessions, and student-centered workshops are opportunities for students to create a culture of inclusion and wellbeing. These events can further open the opportunity to address student concerns and communicate ideas for student success initiatives such as the growth of campus food pantries.

To comply with food and dietary rules/customs, the pantry staff could ensure appropriate cross-exposure restrictions of certain food items. In that same respect, food distributions should not stigmatize any student or campus food pantry employee. Instead, it might be advantageous to conduct multiple food distribution events throughout the year. Additionally, pantry staff members could work with community food vendors and meal delivery services to apply student offers and integrative programs with the campus food pantry. Experimenting with different opportunities could allow the pantry staff members to determine what would be best for students and the campus community. It would be beneficial for the student workers to help identify the variety of foods students request, which would also help grow the camaraderie and communications among peers in a collegial environment.

College applicants also have many choices to assess when selecting the college or university that will give them the best educational opportunity and experience. College and university admissions and enrollment officers also could consider how they respond to persistent or emerging student concerns as they admit prospective students. Admissions representatives can assess whether an incoming class of students with environmental and ecological interests

surrounding a campus would consider attending their school based on factors related to available campus student services and activities.

Members of admissions offices can also assess whether international students would choose to go to a more affordable school for their financial means over a multiethnic and multicultural community that would possibly allow them to thrive more socially and academically. Several students might begin to develop concerns about how a college or university would best serve their personal needs and subsequent academic success if food retailers or other grocers are neither physically on campus nor in the community.

Recommendations for Future Researchers

Future research can explore the relationships between the types of students' academic schedules and studying patterns overall as related to experiencing food insecurity. Researchers can work to understand the perceptions of food access introduced in this study and consider other solutions for increasing access to healthful and sustainable foods among some of the populations experiencing food insecurity. As colleges and universities begin to offer more opportunities for students, the need for physical, social, and emotional wellness will increase. Students' types of foods and dietary consumption patterns throughout their academic careers will also continue to develop. Such factors can affect students culturally, emotionally, and socially, as well as later in life.

Additionally, students who work while enrolled in school could be researched in focus group settings. Including focus groups in food security studies and higher education research would allow students to address their food insecurity concerns with a group of other individuals in a safe setting—the latter who have similar work and academic experiences on campus. The relationships between a student's personal and professional confidence in obtaining long-term

employment upon graduation and the time to complete a degree can further help understand educational aspirations and student success. It would also be beneficial for researchers to address systemic inequalities and ethnic preferences of food consumption patterns. If there are adequate resources for students following a diet consistent with religious, cultural, athletic, or other personal/dietary preferences, it would be essential to understand how campus food pantries supplement shortfalls of food supply for all the students they serve. Other researchers could consider identifying concentrations of food deserts and the types of food retailers commonly found in those same areas. Dietary food laws and food security policies in the United States could also be used to infer quantitative and qualitative understandings of local food environments.

Direct changes in the retail food environment in neighborhoods and the convergence of public health concerns can also assist educational policymakers and researchers in identifying immediate risks associated with academic disparities and identifying areas that can become food deserts. By studying dietary quality changes throughout college enrollment, policymakers, researchers, and academicians can obtain an overview of current institutional goals to align with the convergence of food systems. Additionally, campus meal plans and the types of food products available in specific regions or the neighborhoods of similarly situated populations can help inform educational policy and public health outcomes related to higher education.

As illustrated in this study's findings, food insecurity also affects faculty and staff, furthering the problem beyond student success. The relationships among students, faculty, staff, and administration, can help inform institutional policy decisions at the state and local level while advancing future development in public health and educational leadership studies.

Emerging basic needs for adults and students returning to school could also be used to provide relevant and appropriate resources necessary to succeed.

Conclusion

This study helped contribute to the existing research on food insecurity and campus food pantries. The researcher focused on pantry operations and the types of barriers that students face when accessing their food needs. The researcher also looked closely at the neighborhood food environment to identify if cultural or dietary foods affect food consumption in specific areas. The study results can help interpret the distance students, families, and food pantry representatives travel to access or purchase foods that are necessary to operate their food pantry or consume individually. In addition to education, food and nutrition, and law, the study also helps with the emerging literature in the academic fields of public health, urban geography, and dietetics.

Additionally, the study can help with introducing new ways of approaching food insecurity and the changing food environments across communities. While the researcher did not assess shopping behaviors and personal accessibility to specific food stores, this study's findings could help understand the relationship between the ethnic composition of specific neighborhoods and the overall diverse dietary and food preferences of student populations in the U.S.

The campus food pantry has become an increasingly essential function of colleges and universities. Campus food pantries will continue to cultivate broader conversations about food security, poverty, global health, and hunger. The quality of foods at campus food pantries and throughout the overall campus food environment will continue to affect students who encounter barriers to food access. The use of campus food pantries and food banks can help policymakers identify changes in food environments and aid in developing more prosperous communities.

For individual communities, it is essential also to be aware of the types of examples set forth by local academic institutions, and public entities, broadly defined. To the advancement of higher education, it is critical to understand how public institutions work to support and sustain cultural, faith-based, and secular values in an environment that promotes respectful discourse, dialog, and decision-making. The university's function is to nourish the mind, advance knowledge, and provide a quality education for all students. How students secure their basic needs at a community and institutional level requires careful consideration, growth, empowerment, input, and courage. Students who are empowered to pursue the keys to their academic success can learn to thrive in any educational environment.

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APPENDIX A

IRB Approval Notice



Pepperdine University
24255 Pacific Coast Highway
Malibu, CA 90263
TEL: 310-506-4000

NOTICE OF APPROVAL FOR HUMAN RESEARCH

Date: November 15, 2019

Protocol Investigator Name: Sonya Shariffard

Protocol #: 19-10-1199

Project Title: Books or Food? Food insecurity and the rise of campus food pantries in the United States

School: Graduate School of Education and Psychology

Dear Sonya Shariffard:

Thank you for submitting your application for exempt review to Pepperdine University's Institutional Review Board (IRB). We appreciate the work you have done on your proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations 45 CFR 46.101 that govern the protections of human subjects.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an amendment to the IRB. Since your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite the best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete written explanation of the event and your written response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* at community.pepperdine.edu/irb.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval. Should you have additional questions or require clarification of the contents of this letter, please contact the IRB Office. On behalf of the IRB, I wish you success in this scholarly pursuit.

Sincerely,

Judy Ho, Ph.D., IRB Chair

cc: Mrs. Katy Carr, Assistant Provost for Research

APPENDIX B

Recruitment Letter

Dear [Prospective Research Participant]:

My name is Sonya Sharififard, and I am a doctoral candidate in Global Leadership and Change at Pepperdine University, who is currently in the process of recruiting individuals for my dissertation study about campus food pantries in the United States.

The professor supervising my work is Dr. Kfir Mordechay. The study is designed to investigate the types of campus food pantries at public four-year universities in the United States, so I am inviting individuals who are or have been involved in leading the events and efforts of the food pantry of your campus.

Please understand that your participation in my study is strictly voluntary. The following is a description of what the study participation entails, the terms for participating in the study, and a discussion of your rights as a study participant.

Please read this information carefully before deciding whether you wish to participate.

If you decide to participate in the study, it should take approximately fifteen minutes to complete the survey you have been asked to complete.

Please complete the survey in a single setting. The survey will be open for participation for three weeks after receipt of the offer to participate.

Although minimal, there are potential risks that you should consider before deciding to participate in this study. These risks include common risk associated with using a personal computer i.e., eye strain, discomfort from sitting, cognitive, finger, hand, and wrist fatigue from using a keyboard or touch screen.

The potential benefit to you for participating in the study is your opportunity to get first access to the research findings. The research findings are a benefit because they may be used to help determine the type of services and items that would be best suited for campus food pantries to the desired outcome of institutional policies of the college or university.

If you should decide to participate and find you are not interested in completing the survey in its entirety, you have the right to discontinue at any point without being questioned about your decision. You also do not have to answer any of the questions on the survey that you prefer not to answer--please leave such items blank.

To protect anonymity of all participants, no identifiable information about you will be collected in this study; and therefore, reminder emails will be sent to all participants for full anonymity.

I apologize ahead of time for sending you these reminders if you have completed the survey. If you do not wish to receive reminder emails, please email me your request.

If the findings of the study are presented to professional audiences or published, no information that identifies you personally will be released. The data will be kept in a secure manner for at least three years at which time the data will be destroyed.

If you have any questions regarding the information that I have provided above, please do not hesitate to contact me at Sonya.Sharififard@pepperdine.edu.

If you have further questions or do not feel I have adequately addressed your concerns, please contact Dr. Kfir Mordechay at Kfir.Mordechay@pepperdine.edu.

If you have questions about your rights as a research participant, please contact the chairperson of the IRB Graduate School of Education & Psychology at Pepperdine University.

Her contact information is listed below:

Dr. Judy Ho Gavazza

Chair, GPS IRB & Dissertation Support

Pepperdine University

Graduate School of Education & Psychology

6100 Center Dr. 5th Floor

Los Angeles, CA 90045

W: 310-568-5753

E: gpsirb@pepperdine.edu

Link to survey:

An informed consent form is also attached to this message for your review. Please kindly sign and return the form to me if you decide to participate in this study.

You are welcome to an electronic copy of the study findings in about 1 year.

If you decide you are interested in receiving the findings, please email me at

Sonya.Sharififard@pepperdine.edu.

Thank you for taking the time to read this information, and I hope you will decide to complete the survey.

Sincerely,

Sonya Sharififard

Doctoral candidate in Global Leadership and Change

Pepperdine University

APPENDIX C

Food Pantry Data-Collection Tool

1. If you are comfortable in doing so, please provide the location of your campus (city and state).
2. If you are comfortable in doing so, please provide the location of the food pantry. If your campus has more than one food pantry, please describe the location of each pantry. Note: if your campus offers another service, such as a food closet, food cupboard, food shelf, food cabinet, or other program where similar services are available for students, please indicate that in your response.
3. Please indicate the pantry's hours of operation.
4. What is your current role/professional title with the food pantry?
5. How long have you served in this role?
Less than a year
1-5 years
6-10 years
11-15 years
16-20 years
20+ years
6. Is food insecurity a topic of discussion among faculty and staff at the campus? Note: Food insecurity refers to a condition where an individual has insufficient or reduced intake, quality, variety, or desirability in his/her diet; or multiple indications of disrupted eating patterns because of limited or no access to nutritious, and safe foods.
Yes
No

If yes, why do you think food insecurity is a topic of discussion at your campus?

7. Is the food pantry dedicated as a last resort option for students experiencing food insecurity?
Yes
No
8. Is documentation/proof of student status required to use the pantry's services?
9. Does the pantry only offer food items? If no, please describe the other types of items available.
Yes
No

10. What is the frequency of checking food items for quality assurance?
- Daily
 - Weekly
 - Monthly
 - Semesterly
 - Annually
 - Other
11. Are food regulations and environmental safety considered for items stocked in the pantry? If so, please indicate the specific rules and regulations.
- Yes
 - No
12. Is there consistency in the inventory of food items?
- Never
 - Occasionally
 - Fairly Many Times
 - Very Often
 - Always
13. Are barcodes on food items scanned to facilitate inventory management?
- Yes
 - No
14. Are there certain food items kept beyond the expiration dates? If so, which items?
- Yes
 - No
15. Are special arrangements made for visiting the pantry during the holidays and academic breaks in the school year? If so, what types of arrangements?
- Yes
 - No
16. Are there any policies affecting how students who frequently use the pantry for food items could better address their specific food security needs? If so, please explain.
- Yes
 - No
17. Are patrons primarily students who have used the remainder of their meal plans or points?
- Yes
 - No
 - Our campus does not offer a meal plan

18. Is there a cap on the number of total items per visit? If so, how many?
Yes
No
19. Is there a cap on the number of total visits per student? If so, how many?
Yes
No
20. Are there any certified gluten-free, Halal, Kosher, vegan, or other dietary food items available at the pantry? If yes, please indicate the items.
Yes
No
21. How many food items are available at the pantry per year?
0-25
26-51
51-76
77-100
100+
22. What food items are currently available at the pantry? Please check all that apply.
Fresh
Shelf-stable
Refrigerated
Frozen
Hot
Other
23. What are the food sources of the items currently available at the pantry? Please check all that apply.
Donations
Food banks
Community partnerships
Pantry staff
Campus employees
Grocery stores
Other
24. About what level of macronutrients from food items are currently available at the pantry?
Note: macronutrients include carbohydrates, lipids, and proteins.
Very low
Low
Moderate
High
Very high

25. Considering the level of macronutrients of foods, about what level of micronutrients from food items are currently available at the pantry? Note: micronutrients include vitamins and minerals.
- Very low
 - Low
 - Moderate
 - High
 - Very high
26. In an academic year, what is the approximate number of student patrons at the campus pantry?
- 0-25
 - 26-51
 - 51-76
 - 77-100
 - 100+
27. How has the number of student patrons at the pantry changed throughout the academic year?
- Much Lower
 - Slightly Lower
 - About the Same
 - Higher
 - Much Higher
28. Is there anything else you would like to share?